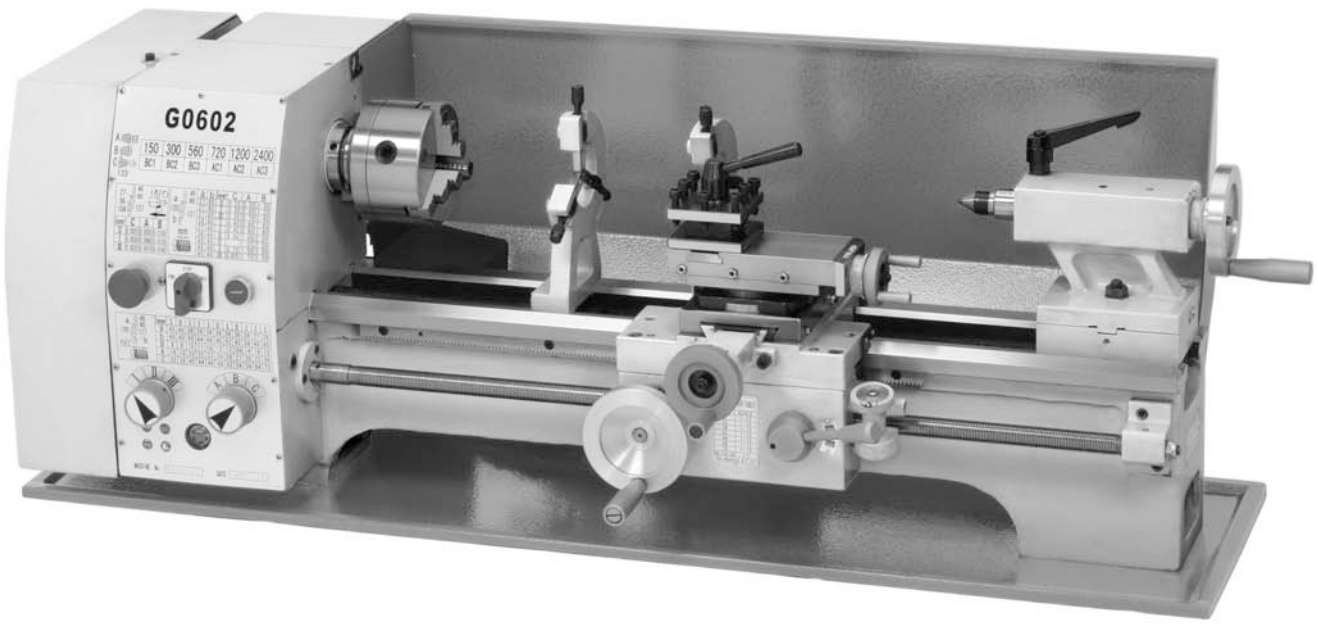
MODEL G0602
10" X 22" BENCHTOP LATHE
OWNER'S MANUAL



COPYRIGHT © NOVEMBER, 2006 BY GRIZZLY INDUSTRIAL, INC. REVISED MAY, 2011 (BL)
WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.
(FOR MODELS MANUFACTURED SINCE 9/08) #CR8722 PRINTED IN CHINA

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

Table of Contents

INTRODUCTION 2
- Manual Accuracy 2
- Contact Info 2
- Identification 3
- Machine Data Sheet 4

SECTION 1: SAFETY 6
- Safety Instructions for Machinery 6
- Additional Safety for Metal Lathes 8
- Glossary of Terms 9

SECTION 2: POWER SUPPLY 10

SECTION 3: SETUP 12
- Unpacking 12
- Hardware Recognition Chart 13
- Inventory 14
- Cleanup 15
- Site Considerations 16
- Power Connection 17
- Test Run & Break-In 18

SECTION 4: OPERATIONS 19
- Control Panel 19
- Mounting Chuck or Faceplate 20
- Replacing Jaws 21
- Four-Jaw Chuck 22
- Faceplate 23
- Tailstock 24
- Drilling with Tailstock 24
- Cutting Shallow Tapers with Tailstock 25
- Aligning Tailstock 25
- Centers 27
- Steady Rest 28
- Follow Rest 28
- Compound Rest 29
- Tool Post 29
- Manual Feed Handwheels 30
- Determining Correct Spindle Speed 31
- Setting Spindle Speed 32
- Setting Power Feed Rate 33
- Inch Threads 34
- Metric Threads 35

SECTION 5: ACCESSORIES 36

SECTION 6: MAINTENANCE 37
- Basic Maintenance 37
- General Lubrication 37
- Belt Adjustment or Replacement 38

SECTION 7: SERVICE 39
- Troubleshooting 39
- Cross Slide Backlash Adjustment 41
- Gib Adjustments 41

SECTION 8: WIRING 42
- Wiring Safety Instructions 42
- Electrical Component Connections 43
- Wiring Diagram 44

SECTION 9: PARTS 45
- Spindle & Drive Belt 45
- Apron 47
- Tool Holder & Compound Rest 48
- Tailstock 49
- Bed & Leadscrew 50
- Steady Rest & Follow Rest 51
- Motor & Electrical 52
- Gearbox Diagram A 53
- Gearbox Diagram B 54
- Cross Feed & Carriage 56

WARRANTY AND RETURNS 61

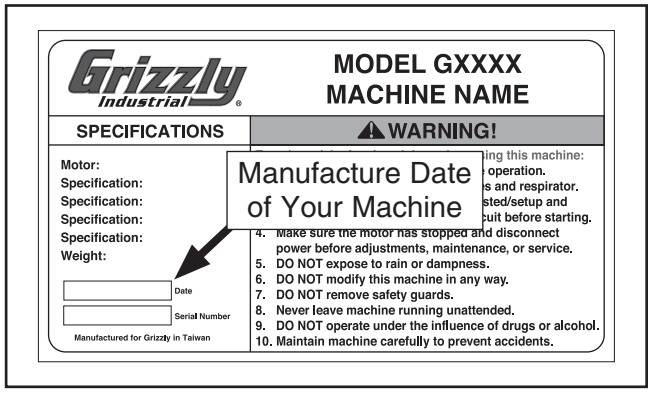
INTRODUCTION

Manual Accuracy

We are proud to offer this manual with your new machine! We've made every effort to be exact with the instructions, specifications, drawings, and photographs of the machine we used when writing this manual. However, sometimes we still make an occasional mistake.

Also, owing to our policy of continuous improvement, **your machine may not exactly match the manual**. If you find this to be the case, and the difference between the manual and machine leaves you in doubt, check our website for the latest manual update or call technical support for help.

Before calling, find the manufacture date of your machine by looking at the date stamped into the machine ID label (see below). This will help us determine if the manual version you received matches the manufacture date of your machine.



For your convenience, we post all available manuals and manual updates for free on our website at **www.grizzly.com**. Any updates to your model of machine will be reflected in these documents as soon as they are complete.

Contact Info

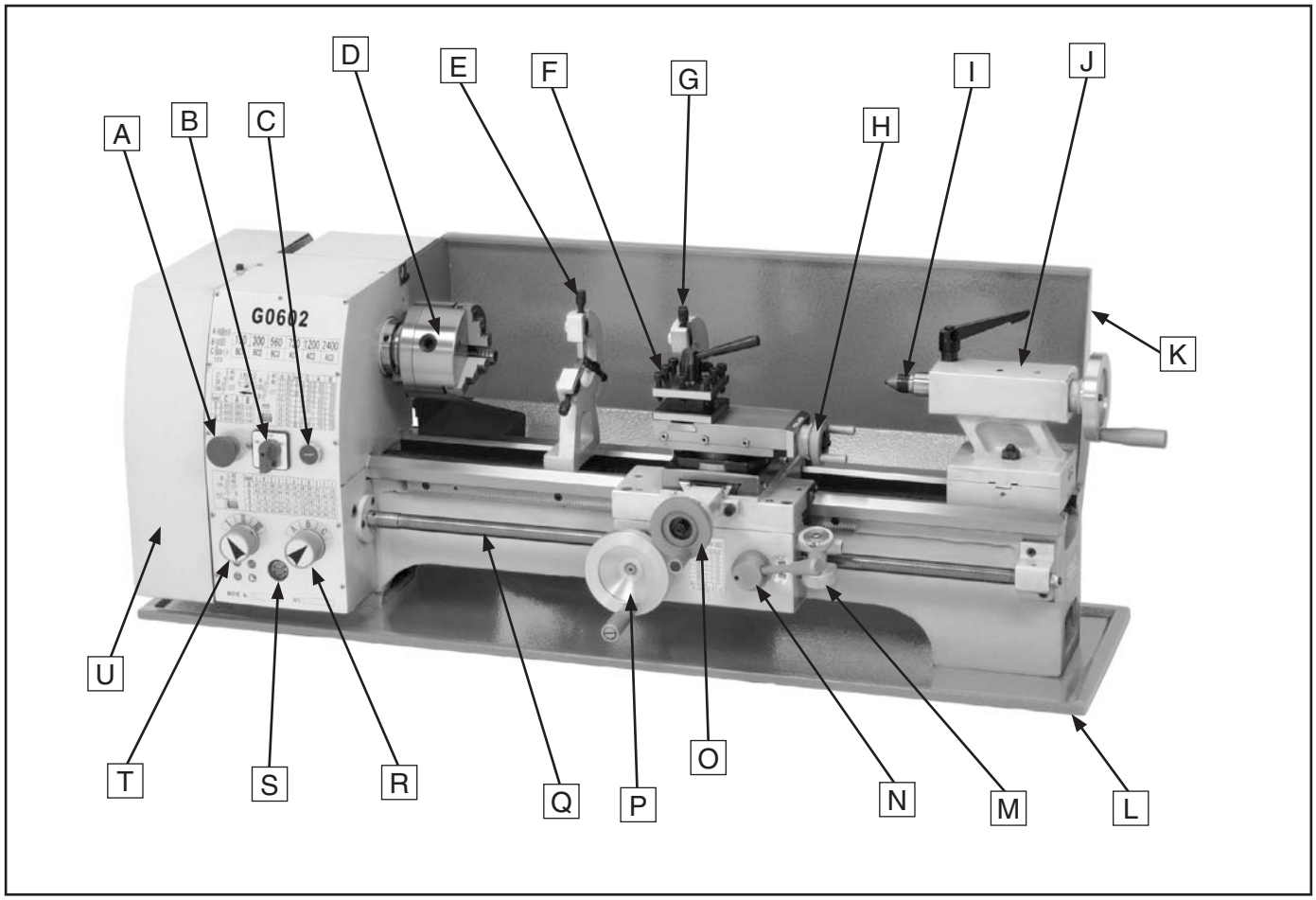
We stand behind our machines. If you have any questions or need help, use the information below to contact us. Before contacting, please get the serial number and manufacture date of your machine. This will help us help you faster.

Grizzly Technical Support
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Email: techsupport@grizzly.com

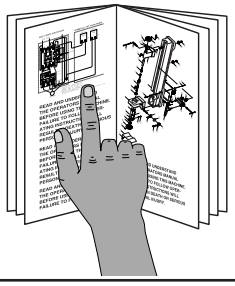
We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

Identification



A. Emergency Stop Button Switch
B. Motor Direction Selector Switch
C. Power ON Push Button Switch
D. 3-Jaw Chuck
E. Steady Rest
F. 4-Way Tool Holder
G. Follow Rest
H. Compound Rest Handwheel
I. MT#3 Dead Center
J. Tailstock
K. Back Splash
L. Chip Tray
M. Thread Dial
N. Half Nut Lever
O. Cross Feed Handwheel
P. Carriage Feed Handwheel
Q. Lead Screw
R. Threading Dial (Alpha)
S. Gearbox Oil Level Sight Glass
T. Threading Dial (Numeric)
U. Change Gear and Belt Safety Cover



⚠WARNING

To reduce the risk of serious injury when using this machine, read and understand this entire manual before beginning any operations.

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G0602 10" X 22" BENCH TOP METAL LATHE

Product Dimensions:

Weight..... 330 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 46 x 22 x 16-5/8 in.
Footprint (Length x Width)..... 47-1/2 x 12-1/2 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 453 lbs.
Length x Width x Height..... 55 x 23 x 22 in.

Electrical:

Minimum Circuit Size..... 20 amp
Switch..... Push Button
Switch Voltage..... 110V
Cord Length..... 5 ft.
Cord Gauge..... 14 gauge
Plug Included..... Yes

Motors:

Main

Type..... Reversible TEFC Capacitor Start and Run Induction
Horsepower..... 1 HP
Voltage..... 110V
Prewired..... 110V
Phase..... Single
Amps..... 13.6A
Speed..... 1725 RPM
Cycle..... 60 Hz
Number of Speeds..... 1
Power Transfer ..... Cogged Belt Drive
Bearings..... Shielded and Lubricated

Main Specifications:

Operation Info

Swing Over Bed..... 9-5/8 in.
Distance Between Centers..... 22 in.
Swing Over Cross Slide..... 6-1/8 in.
Swing Over Saddle..... 6-1/8 in.
Maximum Tool Bit Size..... 1/2 in.
Compound Travel..... 3-1/2 in.
Carriage Travel..... 18-1/2 in.
Cross Slide Travel..... 6-1/2 in.

Headstock Info

Spindle Bore	1 in.
Spindle Size	1-3/4 in.
Spindle Taper	MT#4
Spindle Threads	8
Number of Spindle Speeds	6
Spindle Speeds	150, 300, 560, 720, 1200, 2400 RPM
Spindle Type	Threaded
Spindle Bearings	Tapered Roller

Tailstock Info

Tailstock Quill Travel	2-1/2 in.
Tailstock Taper	MT#3

Threading Info

Number of Longitudinal Feeds	9
Range of Longitudinal Feeds	0.0023 - 0.013 in.
Number of Inch Threads	33
Range of Inch Threads	8 - 72 TPI
Number of Metric Threads	26
Range of Metric Threads	0.25 - 3.5 mm

Dimensions

Bed Width	6-1/8 in.
Leadscrew Diameter	3/4 in.
Leadscrew TPI	12
Leadscrew Length	34 in.
Steady Rest Capacity	1/4 - 2 in.
Follow Rest Capacity	1/4 - 2 in.
Faceplate Size	8 in.

Construction

Headstock	Cast Iron
Headstock Gears	Steel
Bed	Hardened Cast Iron
Body	Cast Iron
Paint	Epoxy

Other

Kilowatt Output	0.746

Other Specifications:

Country Of Origin	China
Warranty	1 Year
Serial Number Location	Data Label on Headstock
Assembly Time	1 hour

Features:

Hardened and Ground V-Ways
Chip Tray Included
Back Splash
Full Featured Carriage and Apron Assemblies Provide Super Accurate Cuts and Finishes

SECTION 1: SAFETY

⚠WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

⚠WARNING

Safety Instructions for Machinery

OWNER'S MANUAL. Read and understand this owner's manual BEFORE using machine. Untrained users can be seriously hurt.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are not approved safety glasses.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

WEARING PROPER APPAREL. Do not wear clothing, apparel, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips which could cause a loss of workpiece control.

HEARING PROTECTION. Always wear hearing protection when operating or observiing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

MENTAL ALERTNESS. Be mentally alert when running machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

⚠WARNING

DISCONNECTING POWER SUPPLY. Always disconnect machine from power supply before servicing, adjusting, or changing cutting tools (bits, blades, cutters, etc.). Make sure switch is in OFF position before reconnecting to avoid an unexpected or unintentional start.

APPROVED OPERATION. Untrained operators can be seriously hurt by machinery. Only allow trained or properly supervised people to use machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in wet or rainy locations, cluttered areas, around flammables, or in poorly-lit areas. Keep work area clean, dry, and well-lighted to minimize risk of injury.

ONLY USE AS INTENDED. Only use machine for its intended purpose. Never modify or alter machine for a purpose not intended by the manufacturer or serious injury may result!

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

CHILDREN & BYSTANDERS. Keep children and bystanders a safe distance away from work area. Stop using machine if children or bystanders become a distraction.

REMOVE ADJUSTING TOOLS. Never leave adjustment tools, chuck keys, wrenches, etc. in or on machine—especially near moving parts. Verify removal before starting!

SECURING WORKPIECE. When required, use clamps or vises to secure workpiece. A secured workpiece protects hands and frees both of them to operate the machine.

FEED DIRECTION. Unless otherwise noted, feed work against the rotation of blades or cutters. Feeding in the same direction of rotation may pull your hand into the cut.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

GUARDS & COVERS. Guards and covers can protect you from accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly before using machine.

NEVER STAND ON MACHINE. Serious injury or accidental contact with cutting tool may occur if machine is tipped. Machine may be damaged.

STABLE MACHINE. Unexpected movement during operations greatly increases the risk of injury and loss of control. Verify machines are stable/secure and mobile bases (if used) are locked before starting.

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

UNATTENDED OPERATION. Never leave machine running while unattended. Turn machine ***OFF*** and ensure all moving parts completely stop before walking away.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. An improperly maintained machine may increase the risk of serious injury.

CHECK DAMAGED PARTS. Regularly inspect machine for damaged parts, loose bolts, mis-adjusted or mis-aligned parts, binding, or any other conditions that may affect safe operation. Always repair or replace damaged or mis-adjusted parts before operating machine.

EXPERIENCING DIFFICULTIES. If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support Department at (570) 546-9663.

⚠WARNING
Additional Safety for Metal Lathes

CLEARING CHIPS. Metal chips can easily cut bare skin—even through a piece of cloth. Avoid clearing chips by hand or with a rag. Use a brush or vacuum to clear metal chips.

CHUCK KEY SAFETY. A chuck key left in the chuck can become a deadly projectile when the spindle is started. Always remove the chuck key after using it. Develop a habit of not taking your hand off of a chuck key unless it is away from the chuck.

TOOL SELECTION. Cutting with an incorrect or dull tool bit will often overload the bit and cause it to dig into the workpiece and snap. As a result, hot razor-sharp shards may be ejected that can result in a burn or blinding injury. To increase safety, decrease tool bit load, and provide the best finish possible, always use the correct tool and one that is sharp.

SPEED RATES. Operating the lathe at the wrong speed can cause nearby parts to break or the workpiece to come loose, which will result in dangerous projectiles that could cause severe impact injury. Large workpieces must be turned at slow speeds. Always use the appropriate feed and speed rates.

STOPPING SPINDLE BY HAND. Stopping the spindle by putting your hand on the workpiece or chuck creates an extreme risk of entanglement, impact, crushing, friction, or cutting hazards. Never attempt to slow or stop the lathe spindle with your hand. Allow the spindle to come to a stop on its own or use the brake (if equipped).

LONG STOCK SAFETY. Long stock can whip violently if not properly supported, causing serious impact injury and damage to the lathe. Reduce this risk by supporting any stock that extends from the chuck/headstock more than three times its own diameter. Always turn long stock at slow speeds.

SAFE CLEARANCES. Workpieces that crash into other components on the lathe may throw dangerous projectiles in all directions, leading to impact injury and damaged equipment. Before starting the spindle, make sure the workpiece has adequate clearance by hand-rotating it through its entire range of motion. Also, check the tool and tool post clearance, chuck clearance, and saddle clearance.

REMOVING/INSTALLING CHUCKS. Chucks are heavy and often oily and slippery to hold. Losing your grip on a chuck can lead to crushed hands or amputated fingers. To reduce this risk and protect the lathe bed, cover the bed with a sheet of wood and use a chuck cradle. For large chucks, also get the assistance of one or more people, and use an appropriate hoisting apparatus when installing or removing.

SECURING WORKPIECE. A thrown workpiece may cause severe injury or even death. When swapping the chuck jaw positions, double-check that the jaw fasteners are tight and that the top jaw is fully seated with the lower jaw no gaps exist between the two. When clamping a workpiece, maximum gripping force is attained at full jaw and scroll gear engagement. If jaw and scroll gear are only partially engaged, clamping force is reduced.

CRASHES. Tooling or components that contact a spinning chuck may shatter sending metal fragments in all directions resulting in severe impact injuries and major damage to the lathe. Reduce this risk by releasing automatic feeds after use and checking clearances before starting the lathe.

CUTTING FLUID SAFETY. Contaminated cutting fluid is a toxic biohazard that can cause poisoning from skin contact. Incorrectly positioned cutting fluid nozzles can splash on the operator or the floor, resulting in an exposure or slipping hazard. To decrease your risk, change cutting fluid regularly and use the system carefully.

Glossary of Terms

The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this lathe and metalworking in general. Become familiar with these terms for assembling, adjusting or operating this machine. Your safety is **VERY** important to us at Grizzly!

Arbor: A machine shaft that supports a cutting tool.

Backlash: Wear in a screw or gear mechanism that may result in slippage, vibration, and loss of tolerance.

Carriage: A main housing that consists of the apron and the saddle.

Cross Slide: A fixture attached to the lathe carriage that holds the compound rest and can be moved in and out.

Compound Rest: A fixture attached to the cross slide that holds the tool holder and can be moved in and out.

Cutting Speed: The distance a point on a cutter moves in one minute, expressed in meters or feet per minute.

Dial Indicator: An instrument used in setup and inspection work that shows on a dial the amount of error in size or alignment of a part.

Dividing Head: A milling machine accessory used to divide a circular object into a number of equal parts.

Down Milling or Climb Milling: Feeding the workpiece in the same direction as the cutter rotation.

Facing: In lathe work, cutting across the end of a workpiece, usually to machine a flat surface.

Feed: The movement of a cutting tool into a workpiece.

Fixture: A device that securely holds the workpiece in place during cutting operation as opposed to a jig which is used to hold and guide a workpiece through an operation.

Gib: A tapered wedge located along a sliding member to take up wear or to ensure a proper fit.

Headstock: The major lathe component that houses the spindle and motor drive system to turn the workpiece.

Lathe Center: A lathe accessory with a 60° point which is inserted into the headstock or tailstock of the lathe and is used to support the workpiece.

Leadscrew: Lathe—The long screw that is driven by the end gears and supplies power to the carriage. Mill—The screws that move the table in longitudinal, transverse, or vertical directions.

Saddle: The upper portion of carriage that rides on the lathe ways and supports the cross feed and the follow rest.

Spindle: The revolving shaft that holds and drives the workpiece or cutting tool.

Tailstock: A moveable fixture opposite of the headstock on a lathe that has a spindle used to support one end of a workpiece and for holding tools.

Tool Post: The part of the compound rest that holds the tool holder.

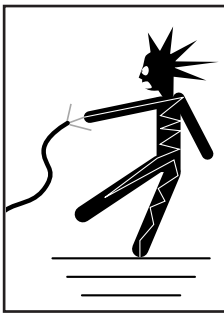
Turret: Lathe—A machine fixture that holds multiple tools and can be revolved and indexed to position. Mill—The part of a mill which rotates on the column and can be set to a specific degree.

Ways: The precision machined and flat tracks on a lathe or mill on which the carriage, tailstock, and the mill table and knee slide.

SECTION 2: POWER SUPPLY

Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by a qualified electrician in accordance with all applicable codes and standards.



⚠WARNING

Electrocution, fire, or equipment damage may occur if machine is not correctly grounded and connected to the power supply.

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating at 110V... 13.6 Amps

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the requirements in the following section.

Circuit Requirements

This machine is prewired to operate on a 110V power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage 110V/120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Minimum Circuit Size ..... 20 Amps

A power supply circuit includes all electrical equipment between the main breaker box or fuse panel in your building and the incoming power connections inside the machine. This circuit must be safely sized to handle the full-load current that may be drawn from the machine for an extended period of time.

⚠CAUTION

For your own safety and protection of property, consult a qualified electrician if you are unsure about wiring practices or electrical codes in your area.

Note: *The circuit requirements listed in this manual apply to a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult a qualified electrician to ensure that the circuit is properly sized for safe operation.*

Grounding & Plug Requirements

This machine MUST be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug (similar to the figure below). The plug must only be inserted into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances.

⚠WARNING

Serious injury could occur if you connect the machine to power before completing the setup process. DO NOT connect to power until instructed later in this manual.

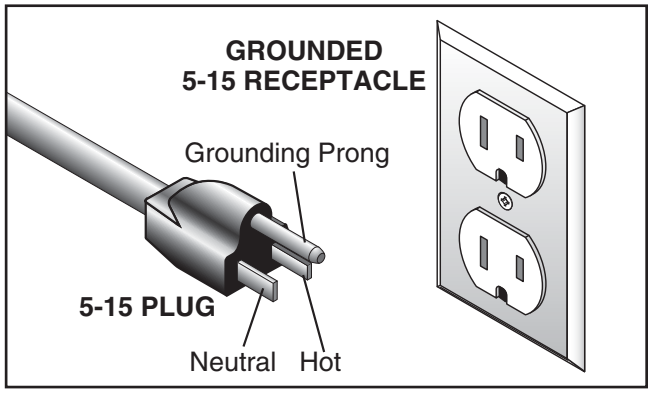
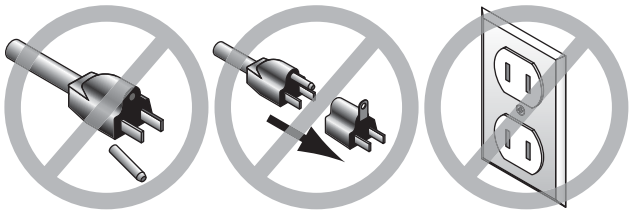


Figure 1. Included 5-15 plug and receptacle.

⚠CAUTION



SHOCK HAZARD!

Two-prong outlets do not meet the grounding requirements for this machine. Do not modify or use an adapter on the plug provided—if it will not fit the outlet, have a qualified electrician install the proper outlet with a verified ground.

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

Extension Cords

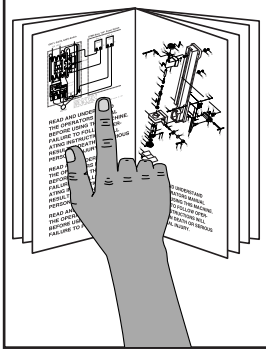
We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

Minimum Gauge Size .....14 AWG
Maximum Length (Shorter is Better).....50 ft.

SECTION 3: SETUP



⚠WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!

⚠WARNING

Wear safety glasses during the entire setup process!

⚠WARNING

This machine and its components are very heavy. Get lifting help or use power lifting equipment such as a forklift to move heavy items.

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover any damage, *please call us immediately at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

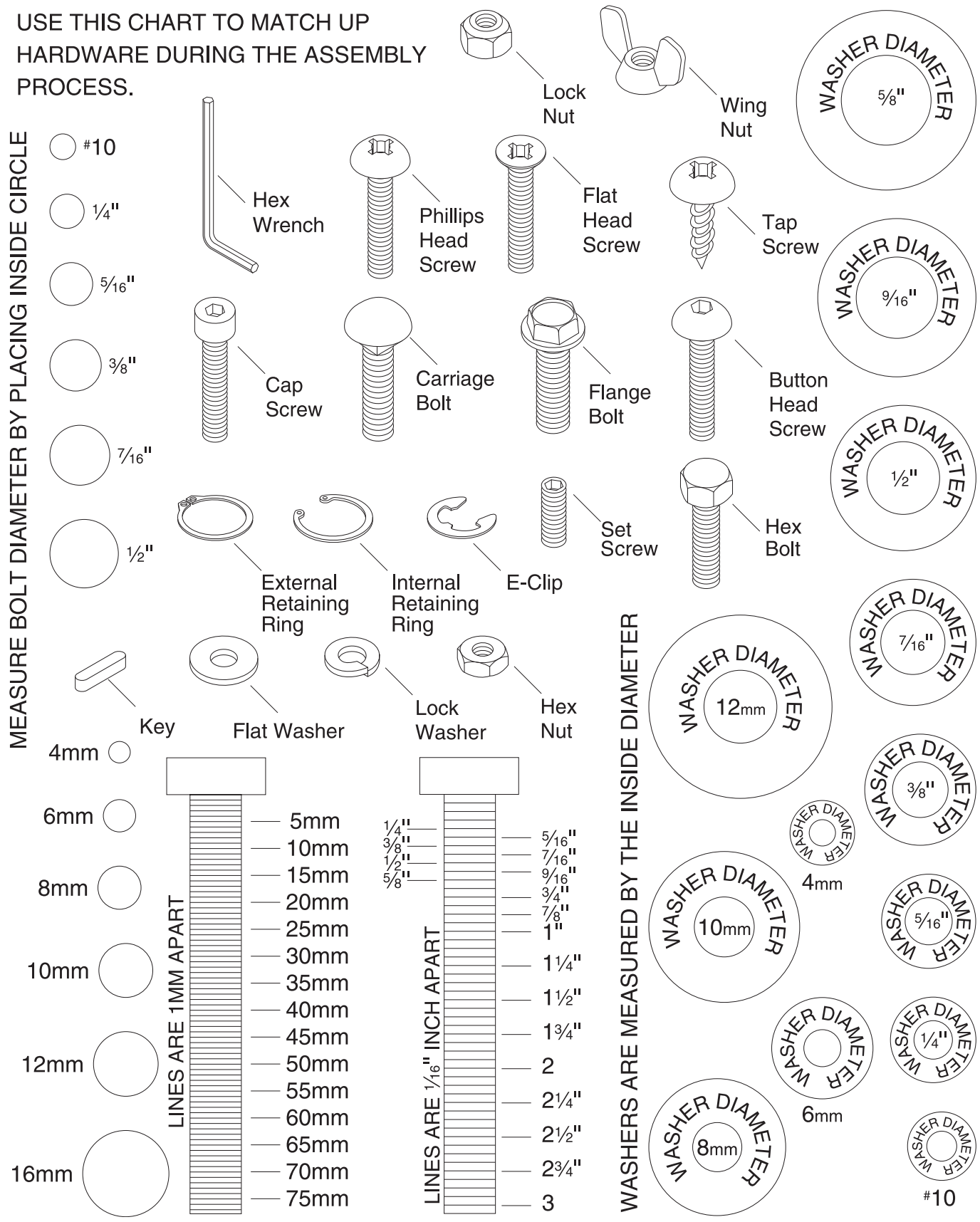
When you are completely satisfied with the condition of your shipment, inventory the contents.

⚠WARNING

SUFFOCATION HAZARD!

Keep children and pets away from plastic bags or packing materials unpacked with this machine. Discard immediately.

Hardware Recognition Chart



Inventory

The following is a description of the main components shipped with your machine. Lay the components out to inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Installed Accessories (Figure 1).....Qty.
A. 5" Three-Jaw Chuck.....1
B. Steady Rest.....1
C. 4-Way Tool Post and Compound Rest.....1
D. Compound Slide.....1

Packaged Accessories (Figure 2)
E. Hex Wrench Set (2.5, 3, 4, 5, 6 mm).....1 EA
F. Tool Box.....1
G. 8" Faceplate.....1
H. 6½" Four-Jaw Universal Chuck.....1
I. Low Range Belt.....1
High Range Belt (Installed).....1
J. #2 Phillips and Standard Screwdriver...1 EA
K. Wrench Set (12/14, 12/14, 19/17 mm)....1 EA
L. Three-Jaw Chuck Internal Jaw Set.....1
M. Three-Jaw Chuck Key.....1
N. Four-Jaw Chuck Key.....1
O. Oil Bottle.....1
P. Cross Feed Handle.....1
Q. Carriage Feed Handle.....1
R. Dead Center MT#3.....1
S. Change Gear Set.....1
— Change Gear (27-tooth, Installed).....1
— Change Gear (36-tooth).....1
— Change Gear (40-tooth).....1
— Change Gear (44-tooth).....1
— Change Gear (46-tooth).....1
— Change Gear (48-tooth, Installed).....1
— Change Gear (52-tooth).....1
— Change Gear (45-tooth).....1
— Change Gear (56-tooth, Installed).....1
— Change Gear (60-tooth).....1
— Plastic Drive Gear (60-tooth, Installed)...1
— Change Gear (104-tooth, Installed).....1
— Change Gear (120-tooth).....1
— Change Gear (127-tooth, Installed).....1

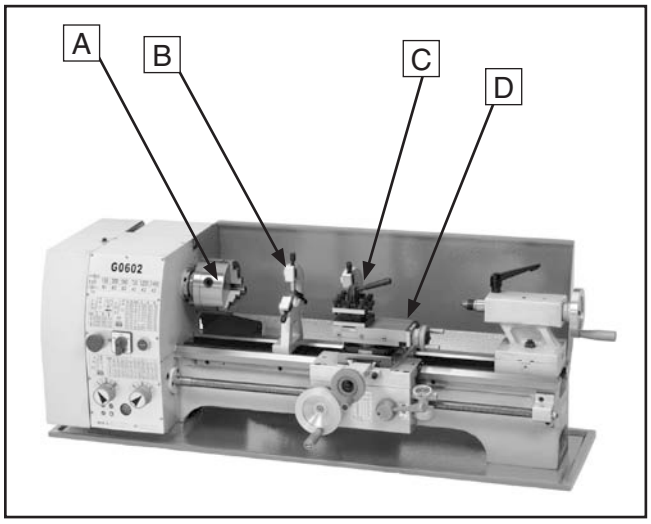


Figure 1. Installed accessories.

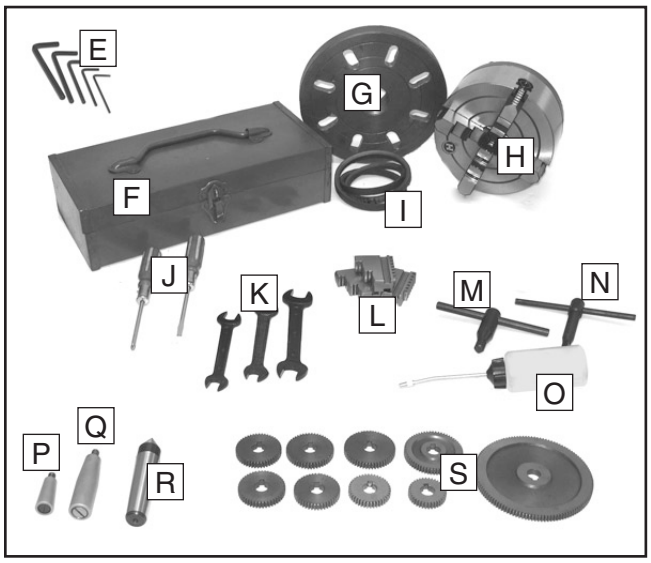


Figure 2. Packaged accessories.

NOTICE

If you cannot find an item on this list, check the mounting location on the machine or the packaging materials. Sometimes parts are pre-installed for shipping, or they become hidden by packaging materials.

Cleanup

The unpainted surfaces of your machine are coated with a heavy-duty rust preventative that prevents corrosion during shipment and storage. This rust preventative works extremely well, but it will take a little time to clean.

Be patient and do a thorough job cleaning your machine. The time you spend doing this now will give you a better appreciation for the proper care of your machine's unpainted surfaces.

There are many ways to remove this rust preventative, but the following steps work well in a wide variety of situations. Always follow the manufacturer's instructions with any cleaning product you use and make sure you work in a well-ventilated area to minimize exposure to toxic fumes.

Before cleaning, gather the following:
- Disposable Rags
- Cleaner/degreaser (WD•40 works well)
- Safety glasses & disposable gloves
- Plastic paint scraper (optional)

Basic steps for removing rust preventative:

1. Put on safety glasses.

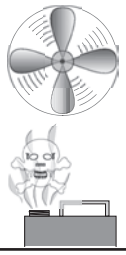
2. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5–10 minutes.

3. Wipe off the surfaces. If your cleaner/degreaser is effective, the rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with the rag.

4. Repeat **Steps 2–3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant to prevent rust.

⚠WARNING

Gasoline or products with low flash points can explode or cause fire if used to clean machinery. Avoid cleaning with these products.



⚠CAUTION

Many cleaning solvents are toxic if concentrated amounts are inhaled. Only work in a well-ventilated area.

NOTICE

Avoid chlorine-based solvents, such as acetone or brake parts cleaner, that may damage painted surfaces. Test all cleaners in an inconspicuous area before using to make sure they will not damage paint.

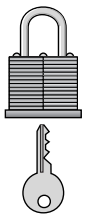
Site Considerations

Weight Load

Refer to the **Machine Data Sheet** for the weight of your machine. Make sure that the surface upon which the machine is placed will bear the weight of the machine, additional equipment that may be installed on the machine, and the heaviest workpiece that will be used. Additionally, consider the weight of the operator and any dynamic loading that may occur when operating the machine.

Space Allocation

Consider the largest size of workpiece that will be processed through this machine and provide enough space around the machine for adequate operator material handling or the installation of auxiliary equipment. With permanent installations, leave enough space around the machine to open or remove doors/covers as required by the maintenance and service described in this manual. **See below for required space allocation.**



⚠CAUTION

Children or untrained people may be seriously injured by this machine. Only install in an access restricted location.

Physical Environment

The physical environment where your machine is operated is important for safe operation and the longevity of its components. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature range exceeds 41°–104°F; the relative humidity range exceeds 20–95% (non-condensing); or the environment is subject to vibration, shocks, or bumps.

Electrical Installation

Place this machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, or other hazards. Make sure to leave access to a means of disconnecting the power source or engaging a lockout/tagout device.

Lighting

Lighting around the machine must be adequate enough that operations can be performed safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.

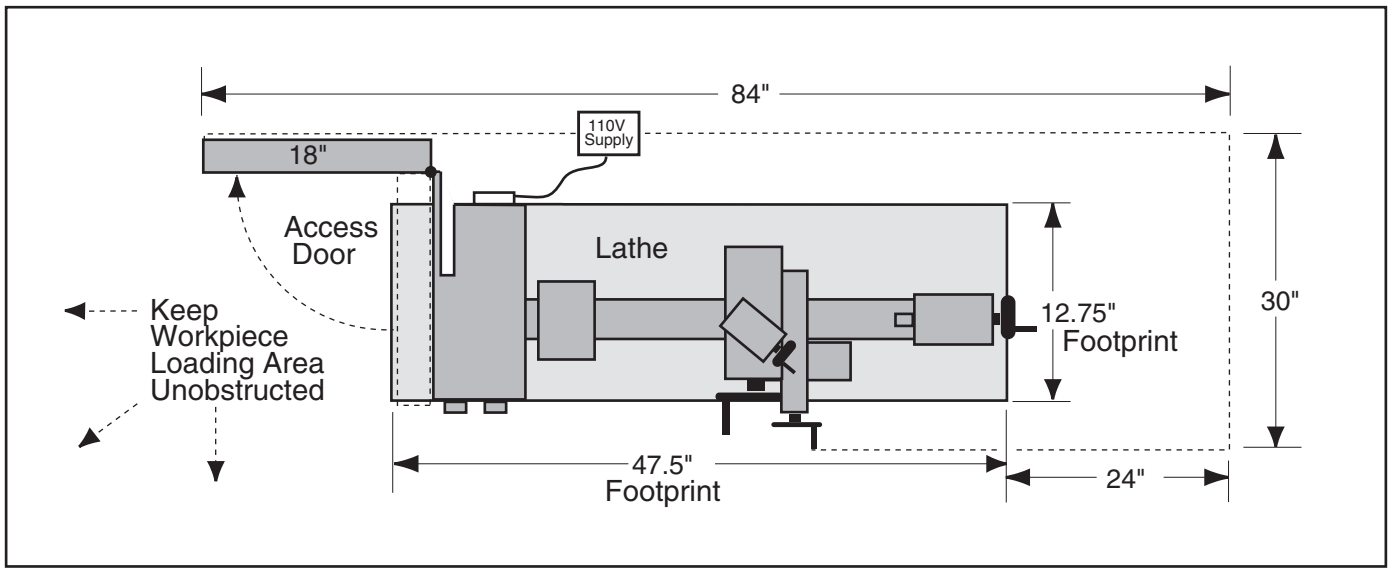


Figure 3. Minimum working clearances.

Power Connection

After you have completed all previous setup instructions and circuit requirements, the machine is ready to be connected to the power supply.

To avoid unexpected startups or property damage, use the following steps whenever connecting or disconnecting the machine.

Connecting Power

1. Turn the machine power switch **OFF**.

2. Insert the power cord plug into a matching power supply receptacle. The machine is now connected to the power source.

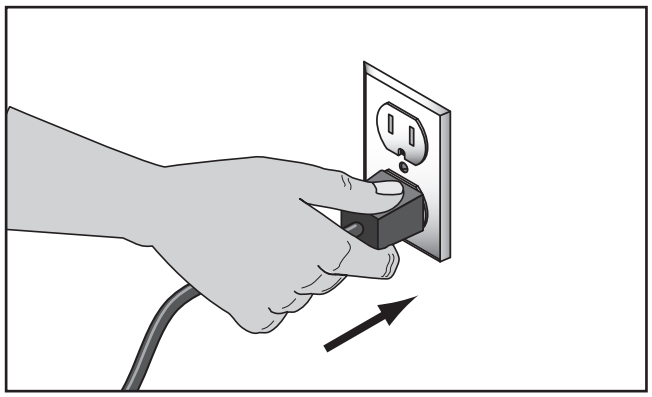


Figure 4. Connecting power.

Disconnecting Power

1. Turn the machine power switch **OFF**.

2. Grasp the molded plug and pull it completely out of the receptacle. Do not pull by the cord as this may damage the wires inside.

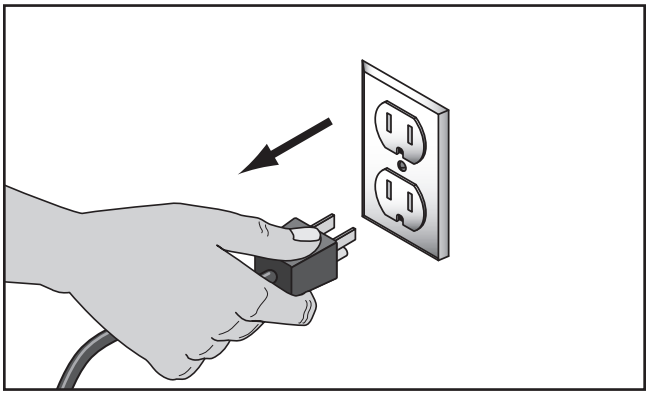


Figure 5. Disconnecting power.

Test Run & Break-In

NOTICE

Make sure the half nut lever is disengaged before you start the lathe! Thoroughly familiarize yourself with all the controls and their functions before using the longitudinal feed! NEVER SHIFT LATHE GEARS WHEN MACHINE IS OPERATING.

The purpose of the test run is to make sure the lathe and safety features operate correctly before proceeding with additional setup.

To begin the test run & break-in procedure:

1. Make sure the lathe is lubricated and the headstock oil level is full. Refer to **General Lubrication** on **Page 37**.

2. Make sure the chuck is correctly secured to the spindle. Refer to **Mounting Chuck or Faceplate** on **Page 20** for details.

3. Change the belt position so the spindle will rotate at 150 RPM, and disengage the half nut with the lever shown in **Figure 6**. Refer to **Setting the Spindle RPM** on **Page 32** for clarification.

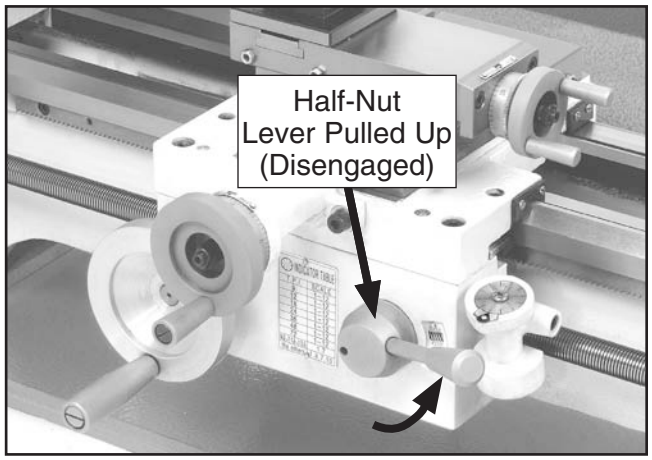


Figure 6. Half nut lever in the disengaged position.

4. Rotate the red emergency stop button (**Figure 7**) clockwise so it pops out, and make sure the motor direction selector points to STOP.

5. Move the numeric gearbox dial to **I**, and the alpha gearbox dial to **C**, (see **Figure 7**).

   Note: *You may have to slightly rotate the chuck by hand to engage the gears.*

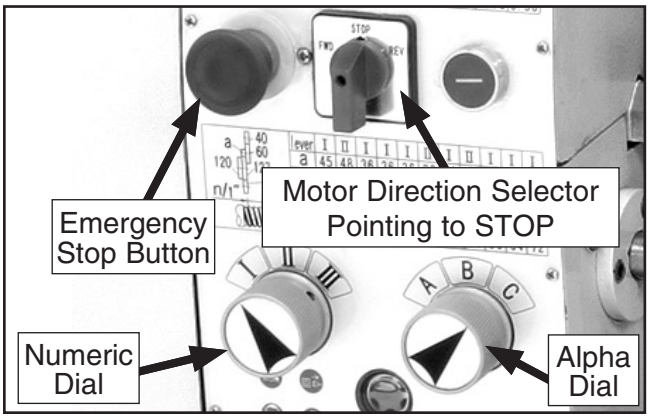


Figure 7. Headstock and gearbox controls.

6. Push the green power button, then turn the selector to FWD. The top of the chuck should now be turning toward you.

7. Push the emergency stop button. The lathe should stop. If not, disconnect power and refer to **Troubleshooting** on **Page 35**.

8. Return the selector to STOP, reset the emergency stop button, restart the lathe, and let the lathe run for a minimum of 10 minutes.

   —If you hear squealing or grinding noises, turn the lathe ***OFF*** immediately and correct any problem before further operation.

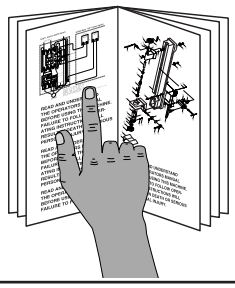
   —If the problem is not readily apparent, refer to **Troubleshooting** on **Page 35**.

9. Turn the lathe ***OFF***, disconnect power, and move the drive belt to the next highest RPM and run the lathe for 10 minutes.

10. Repeat **Step 9** for the rest of the speeds progressively increasing the speed. When you are complete, the lathe is broken in.

11. Change the lubricant in the headstock with Mobil DTE® Oil or an equivalent, and re-lubricate the lathe. Refer to **General Lubrication** on **Page 37** for steps and locations.

SECTION 4: OPERATIONS

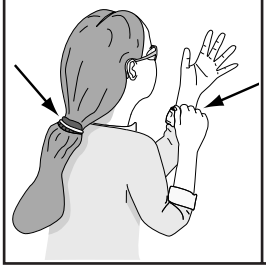


WARNING

To reduce the risk of serious injury when using this machine, read and understand this entire manual before beginning any operations.

WARNING

Damage to your eyes and lungs could result from using this machine without proper protective gear. Always wear safety glasses and a respirator when operating this machine.



WARNING

Loose hair, clothing, or jewelry could get caught in machinery and cause serious personal injury. Keep these items away from moving parts at all times to reduce this risk.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, review industry trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Control Panel

Pressing the red emergency stop button (**Figure 8**) cuts power to the machine. Twisting the emergency stop button clockwise and letting it pop out resets the lathe, so when you push the green power ON button lathe operations can begin again.

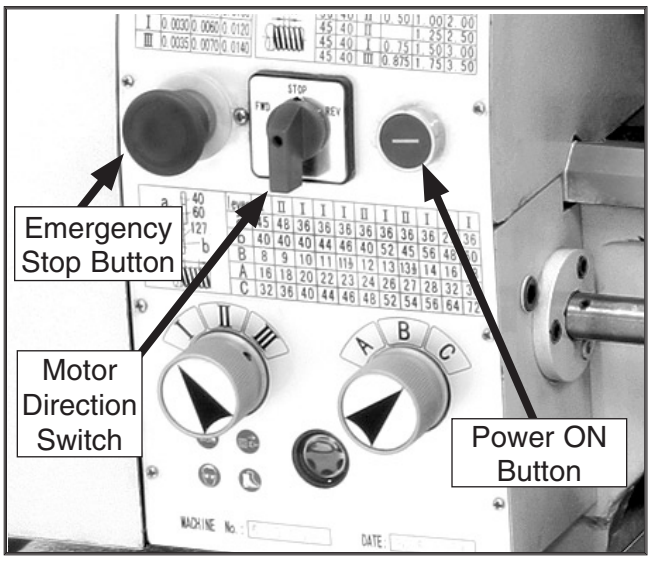
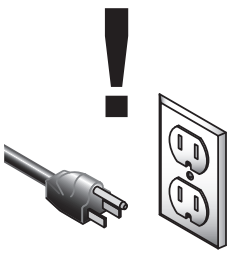


Figure 8. Lathe electrical controls.



WARNING

Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

NOTICE

Complete the Test Run & Break-In procedure on Page 18 before using this lathe for any cutting or threading operations; otherwise, gear box damage will occur.

Mounting Chuck or Faceplate

The three-jaw scroll chuck will automatically self-center the workpiece. It has hardened steel external jaws that hold the workpiece on the outside diameter of the part. An extra set of jaws is included for holding larger workpieces on the inside diameter of the part.

The four-jaw chuck has hardened steel jaws that must be independently adjusted to center the workpiece. Each jaw can be removed from the chuck body and reversed for clamping odd-shaped workpieces.

If either chuck cannot hold your workpiece, the cast-iron faceplate has slots for T-bolts that hold standard or custom clamping fixtures. With the correct clamping hardware, this faceplate will hold non-cylindrical parts such as castings.

Both chucks and the faceplate are removed and installed the same way.

To remove and install the chuck or faceplate:

1. DISCONNECT POWER TO THE LATHE!

2. Lay a piece of plywood over the bedways to protect the precision-ground way surfaces.

3. Use a 5mm hex wrench to remove the two cap screws and the chuck locks (**Figure 9**).

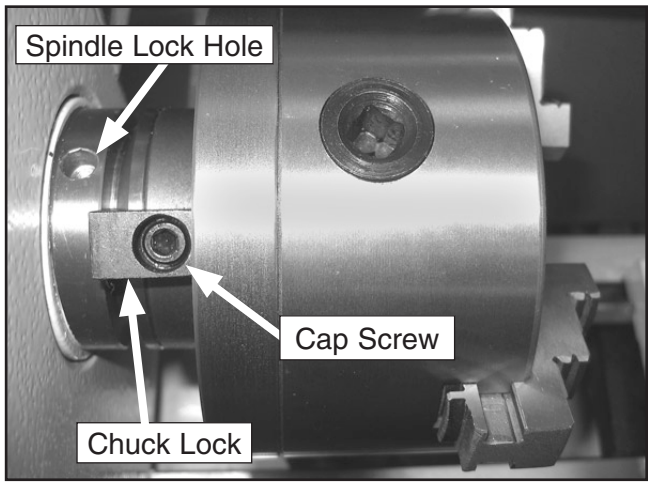


Figure 9. Cap screw, chuck lock and lock hole.

4. Insert the chuck wrenches as shown in **Figure 10**, and hold the spindle and loosen the chuck.

Note: *The chuck loosens in the counterclockwise direction.*

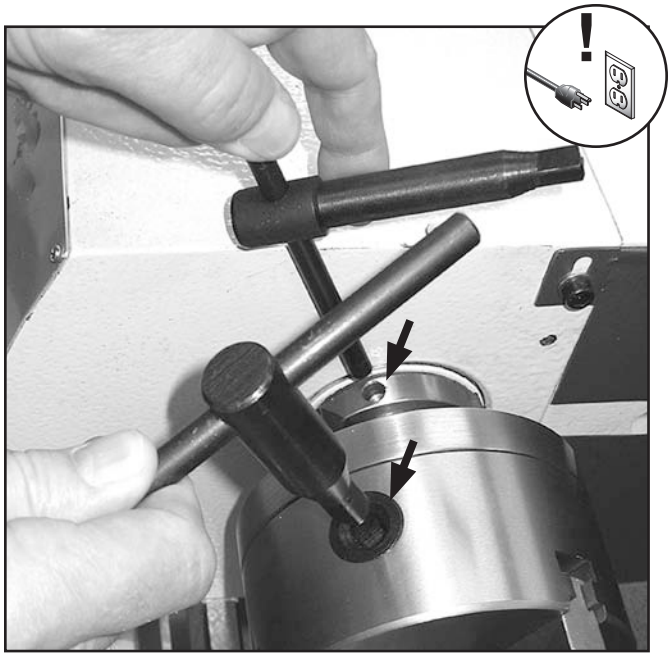


Figure 10. Inserting chuck keys to loosen or tighten the chuck onto the spindle.

5. Support the chuck from falling off of the spindle, unscrew and remove the chuck.

6. Clean, inspect, deburr, and lightly oil all threads and mating surfaces (**Figure 11**).

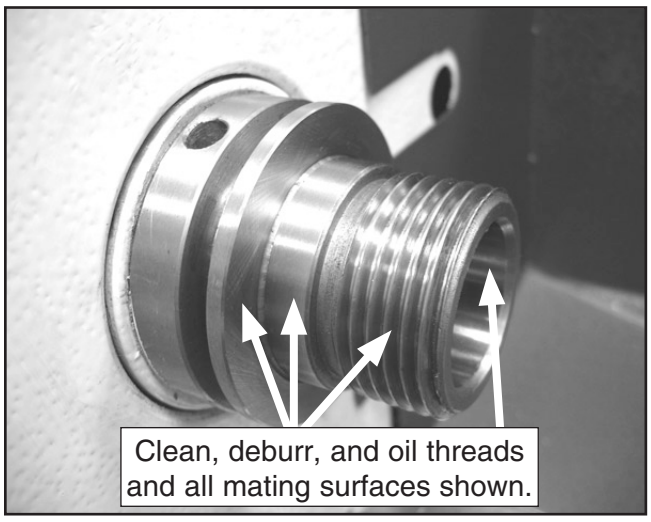


Figure 11. Spindle.

7. Install the faceplate or the other chuck in the reverse order of the previous steps.

Replacing Jaws

The three-jaw scroll chuck has removable hardened steel jaws (**Figure 12**). The outside of the jaws are used to hold the workpiece from the outer diameter.

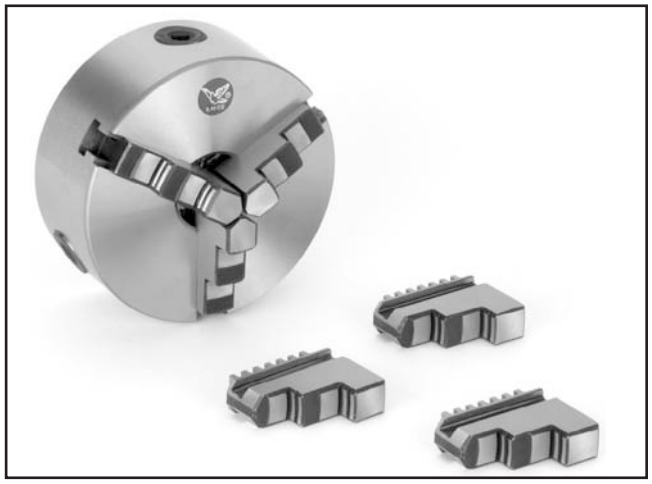


Figure 12. Chuck and jaw selection.

Numbered from 1–3, the jaws must be used in the matching numbered jaw guides (see **Figure 13**).

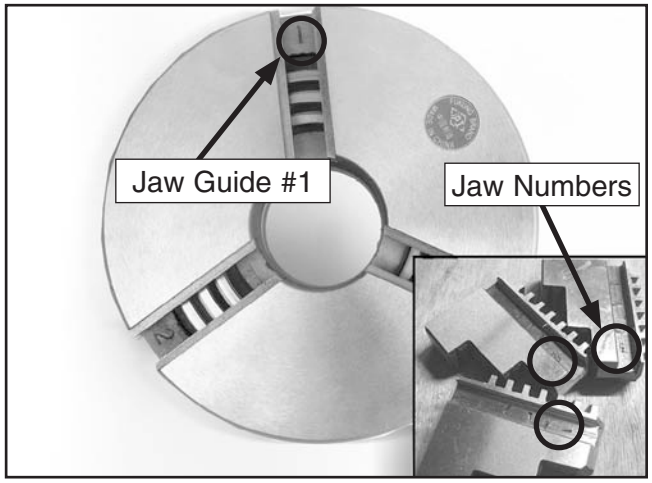


Figure 13. Jaw guide number.

Note: *The chuck need not be removed from the spindle to swap the jaws.*

To remove a set of jaws:

1. DISCONNECT POWER TO THE LATHE!
2. Place a piece of wood over the ways to protect them from potential damage.
3. Turn the chuck key counterclockwise and back the jaws out.
4. Clean the jaw mating surfaces and apply a film of white lithium grease to the mating surfaces.
5. Set the old jaws aside in a safe place free of moisture and abrasives.
6. Rotate the chuck key clockwise until you see the tip of the scroll-gear lead thread just begin to enter jaw guide #1 (see **Figure 14**).

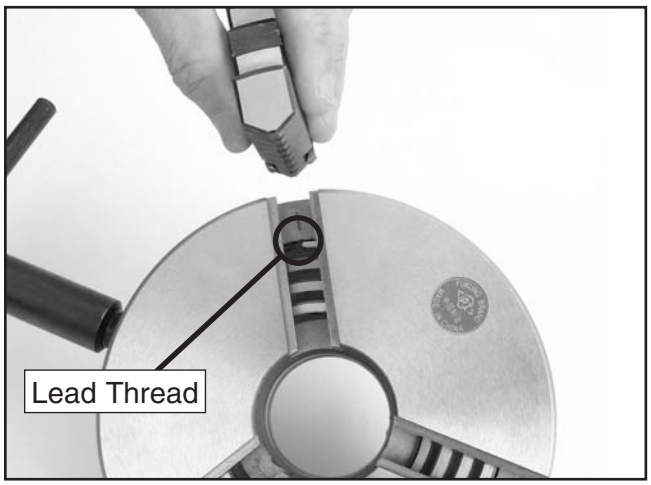


Figure 14. Lead thread on scroll gear.

7. Insert jaw #1 into jaw guide #1 and hold the jaw against the scroll-gear.
8. Rotate the chuck key clockwise one turn to engage the tip of the scroll-gear lead thread into the jaw. To verify the jaw is engaged with the lead thread, pull on the jaw; it should be locked into the jaw guide.
9. Install the other jaws in the same manner.

   — If installed correctly, the three jaws will converge together at the center of the chuck.

   — If the jaws do not come together, repeat this procedure until they do.

Four-Jaw Chuck

To install the four-jaw chuck:

Refer to the **Mounting Chuck or Faceplate** procedures on **Page 20** to mount the four-jaw chuck.

To load a workpiece in the four-jaw chuck:

1. DISCONNECT POWER TO THE LATHE!

2. Using the chuck key, open each jaw so the workpiece will lay flat against the chuck face.

3. Support the workpiece.

4. Lock the tailstock, then turn the tailstock quill so the dead center makes contact or is close to the center point of your workpiece (see **Figure 15**).

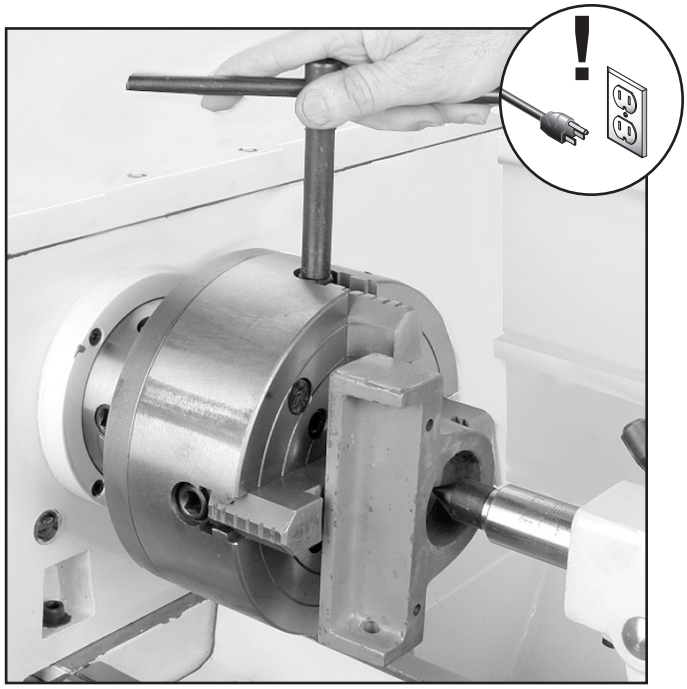


Figure 15. Rough centering procedure with a typical 4-jaw chuck, using the dead center and the tailstock.

5. Turn each jaw until it just makes contact with the workpiece.

6. In an opposite pattern, tighten each jaw in small increments. After you have adjusted the first jaw, continue tightening the opposing jaw. Frequently check the dead center alignment to make sure you have not wandered off your index point due to applying too much pressure to a single jaw.

7. After the workpiece is held in place, back the tailstock away and rotate the chuck by hand. The center point will move if the workpiece is out of center.

8. Make fine adjustments by slightly loosening one jaw and tightening the opposing jaw until the workpiece is precisely aligned. Use a dial indicator for fine tuning adjustments into alignment (see **Figure 16**).

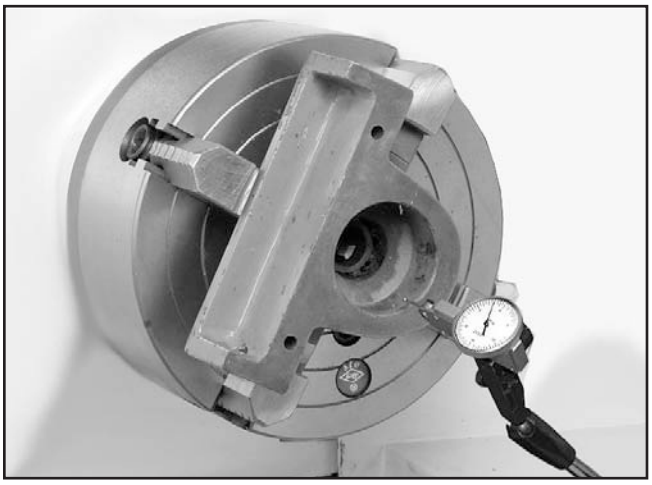
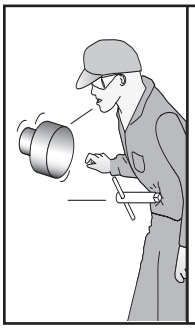


Figure 16. Exact centering procedure with a typical 4-jaw chuck using a dial indicator.



⚠WARNING

Use a lower RPM when machining heavy eccentric workpieces; securely clamp your workpiece and remove the chuck key! Objects thrown from a lathe can cause serious injury or death to the operator or bystanders.

Faceplate

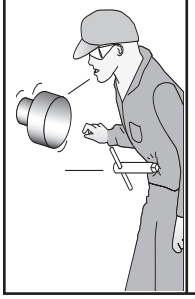
The faceplate can be used to turn non-cylindrical parts or for off-center turning by clamping the workpiece to the faceplate.

Refer to the **Mounting Chuck or Faceplate** procedures on **Page 20** to mount the faceplate.

To load a workpiece onto the faceplate:

1. DISCONNECT POWER TO THE LATHE!
2. Support the workpiece.
3. Slide the tailstock to the workpiece.
4. Lock the tailstock and then turn the tailstock quill so the dead center makes contact with the center point of your workpiece.
5. Lock the tailstock quill when sufficient pressure is applied to hold the workpiece in place.

   Note: *Depending on the workpiece, some additional support may be needed.*
6. Secure the workpiece with a minimum of three independent clamping devices. Failure to follow this step may lead to deadly injury to yourself or bystanders. Take into account rotation and the cutting forces applied to the workpiece when clamping to the faceplate. **Make sure your clamping application will not fail!**
7. Use a lower RPM when machining heavy eccentric workpieces.



⚠WARNING

Use a lower RPM when machining heavy eccentric workpieces; securely clamp your workpiece and remove the chuck key! Objects thrown from a lathe can cause serious injury or death to the operator or bystanders.

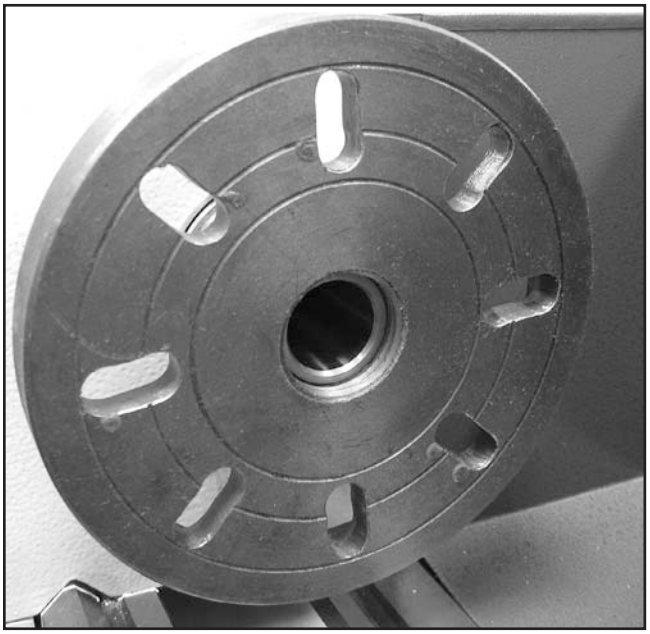


Figure 17. Faceplate installed.

⚠WARNING

Use a minimum of three independent clamping devices when turning eccentric workpieces. Failure to provide adequate clamping will cause workpiece to eject.

Tailstock

The tailstock (**Figure 18**) can be used to support workpieces with the use of a live or dead center. Using an MT#3 drill chuck and a drill bit, the lathe can drill or bore holes in the center of a part. The tailstock can also be offset for cutting shallow tapers.

To use the tailstock:

1. Slide the tailstock to the desired position.
2. Tighten the tailstock lock nut to lock the tailstock in place on the ways.
3. Loosen the quill lock lever to unlock the quill.
4. Turn the quill feed handwheel clockwise to move the quill towards the spindle or counterclockwise to move away from the spindle.
5. Tighten the quill lock lever to lock the quill in place.

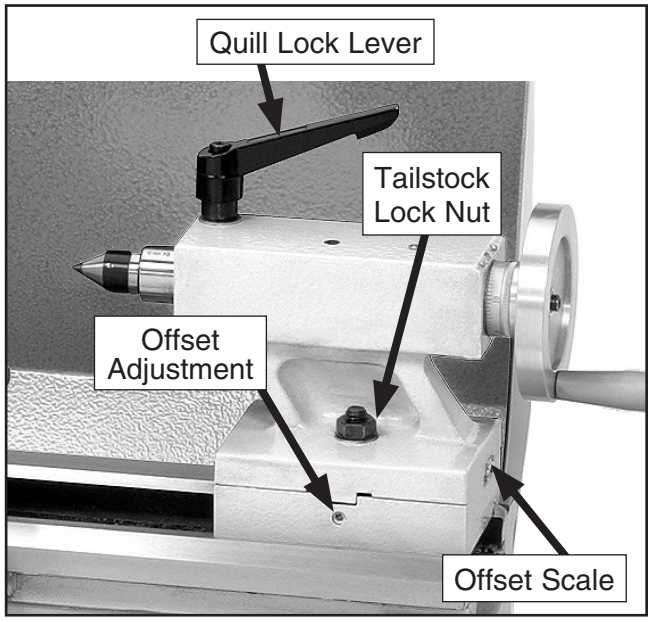


Figure 18. Tailstock and quill lock handles in locked position.

Drilling with Tailstock

To install an MT#3 drill chuck:

1. With the tailstock locknut nut tight, unlock the quill lock lever.
2. Turn the quill feed handwheel clockwise to extend the quill about one inch.
3. Insert an optional MT#3 chuck or an optional MT#3 tapered drill shank into the quill until the taper is firmly seated.
4. Turn the quill feed handwheel clockwise to feed the drill bit into the rotating workpiece.
5. To remove the chuck taper, turn the quill feed handle counterclockwise until the chuck is pushed out of the tailstock taper.

Cutting Shallow Tapers with Tailstock

To setup the tailstock to cut tapers:

1. Loosen the tailstock lock nut.

2. Using a 4mm hex wrench, alternately loosen and tighten the left and right offset adjustment set screws until the desired offset is indicated on the scale (see **Figure 19**).

3. Tighten the tailstock lock nut.

   Note: *To return the tailstock back to the original position, repeat the process until the centered position is indicated on the scale.*

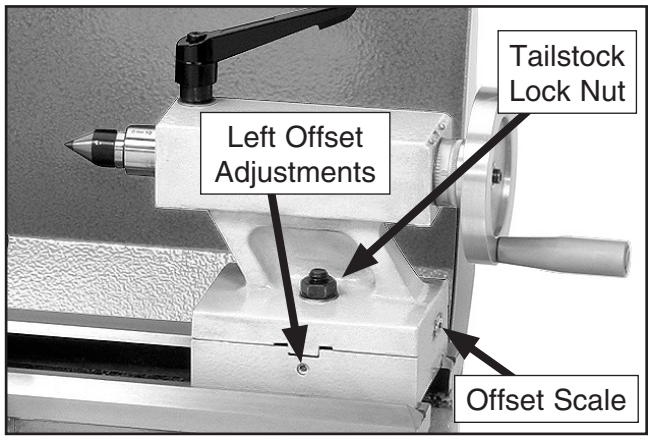


Figure 19. Left offset adjustment.

Aligning Tailstock

The tailstock is factory aligned with the headstock. We recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

To align the tailstock:

1. Using a precision level on the bedways, make sure the lathe is level side-to-side and front-to-back. If the lathe is not level, correct this condition before proceeding.

2. Get two pieces of steel round stock that are two inches in diameter and six inches long.

3. Center drill both ends of one piece of the round stock. Set it aside for use in **Step 6.**

4. Using the other piece of stock, make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60º point (see **Figure 20**).

   Note: *As long as the dead center remains in the chuck, the point of your center will remain true to the spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*

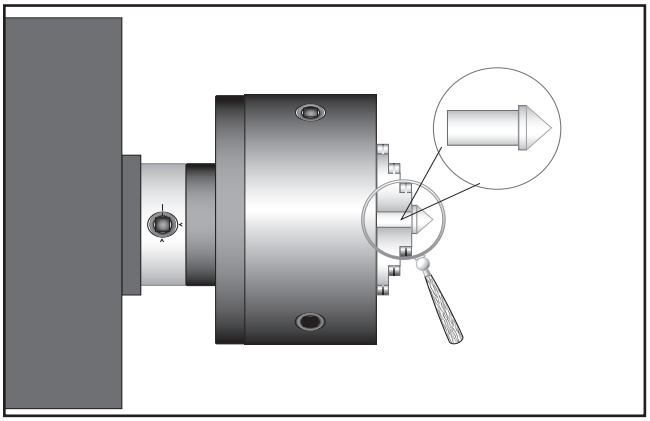


Figure 20. Chuck centering the dead center.

5. Place an optional live center in the tailstock.

6. Attach a lathe dog to the bar stock and mount it between centers**.**

7. Turn approximately 0.010" off the diameter.

8. Measure the stock with a micrometer.

—If the stock diameter is thicker at the tailstock end, the tailstock needs to be moved toward you half the distance of the amount of the taper (see **Figure 21**).

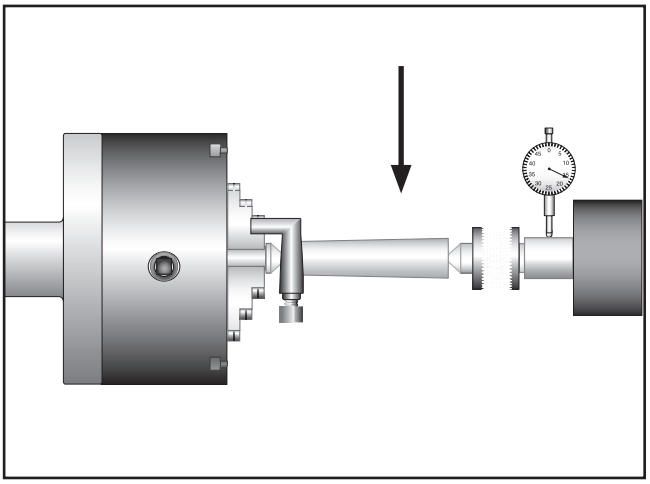


Figure 21. Tailstock adjustment option #1.

—If the stock diameter is thinner at the tailstock end, the tailstock needs to be moved away from you half the distance of the amount of the taper (see **Figure 22**).

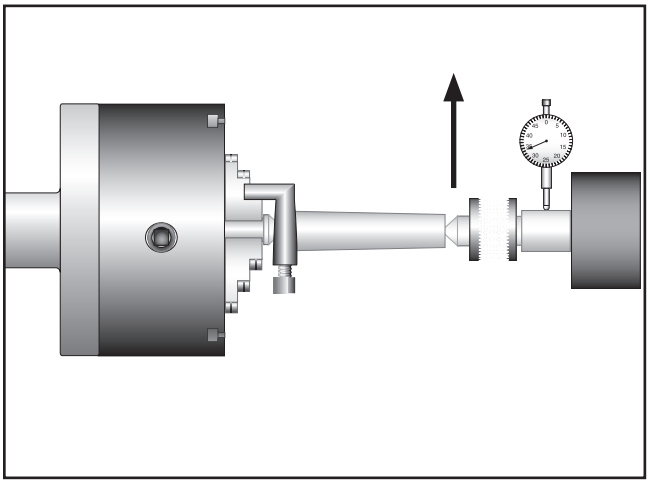


Figure 22. Tailstock adjustment option #2.

9. Mount a dial indicator so the dial plunger is on the tailstock barrel before making adjustments to the tailstock.

10. Turn another 0.010" off of the diameter and check for a taper. Repeat this process as necessary until the desired amount of accuracy is achieved.

Centers

A dead center can be used in the tailstock and lathe spindle to support workpieces. When used in the tailstock, make sure to keep the dead center tip and workpiece lubricated to prevent tip galling.

To install a dead or live center:

1. Feed the quill out about 1" and insert the dead center (**Figure 23**). The mating tapers provide the locking fit.

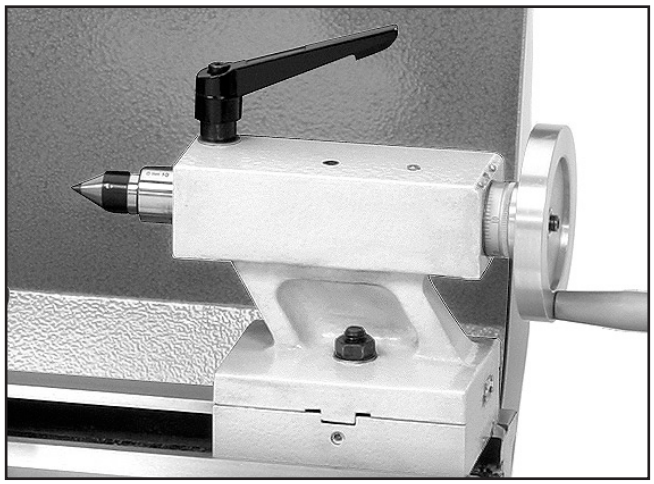


Figure 23. Inserting dead center.

2. Move the tailstock into position and lock in place.

   Note: *Make sure there is a center drilled hole in the end of the workpiece for the dead center.*

3. Feed the quill into the workpiece.

4. Lock the quill into place once the dead center and the workpiece rotate together. The quill may need to be adjusted during operation.

5. To remove the dead center, retract the quill until the dead center pops free.

To install an MT#4 dead center in the spindle:

1. DISCONNECT POWER TO THE LATHE!

2. Remove the chuck from the spindle.

3. Install the MT#4 dead center in the spindle.

4. Attach the faceplate to the spindle, see **Figure 24**.

   Note: *When using the dead center in the spindle, use a lathe dog so that your part will rotate with the faceplate and not spin on the dead center tip.*

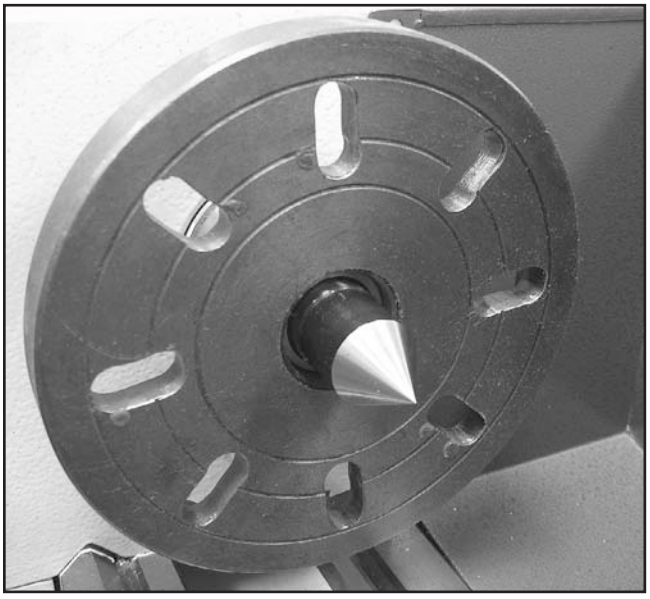


Figure 24. Faceplate and dead center setup.

NOTICE

Failure to keep dead center point well lubricated will gall the dead center and workpiece.

Steady Rest

The steady rest serves as a support for long shafts. The steady rest can be placed anywhere along the length of the ways.

To use the steady rest:

1. Carefully place the steady rest on the lathe bedways.

2. Loosen the finger lock nuts so the finger position can be adjusted (see **Figure 25**).

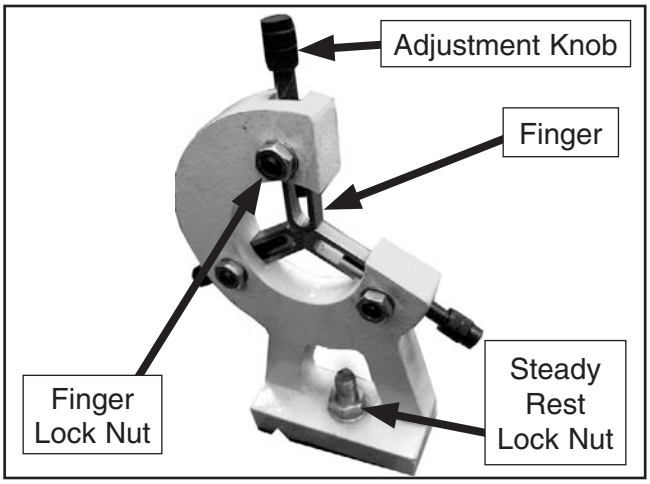


Figure 25. Steady rest.

3. Loosen the steady rest lock nut (see **Figure 25**), and position the steady rest where desired.

4. Tighten the steady rest lock nut.

5. Clamp the workpiece with the chuck and position the tailstock to support the workpiece.

6. Turn the adjustment knobs so the fingers are snug against the workpiece, and then tighten the finger lock nuts.

7. Lubricate the finger tips with an anti-seize lubricant during operation.

8. After prolonged use, the fingers will show wear. Either mill or file the tips for a new contact surface.

Follow Rest

The follow rest in **Figure 26** is mounted on the front of the carriage directly above the ways and follows the movement of the tool. The follow rest requires only two fingers, as the cutting tool acts as the third. The follow rest is used on long, slender parts to prevent flexing of the workpiece from the pressure of the cutting tool.

The sliding fingers are set similar to those of the steady rest—free of play but not binding. Always lubricate during operation. After prolonged use, the fingers will need to be milled or filed to clean up the contact surface.

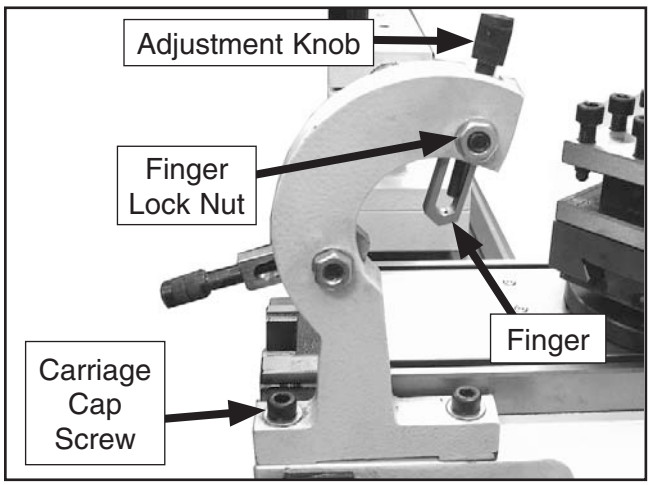


Figure 26. Follow rest.

Compound Rest

The compound rest is used to cut tapers on parts or to set the proper infeed angle when threading. It may also be used to cut specific lengths longitudinally, when set parallel to the spindle axis.

To set the angular position:

1. Loosen the hex nuts on each side of the compound rest (see **Figure 27**).

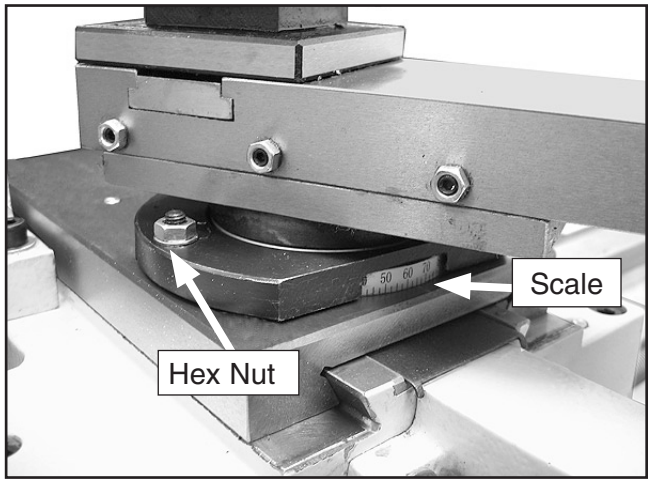


Figure 27. Compound rest, scale, and hex nuts.

2. While watching the scale, rotate the compound rest to the desired angular position.

3. Tighten the two hex nuts. Be sure to not overtighten, as you may strip threads or crack or distort the base casting.

Tool Post

The four-way tool post (**Figure 28**) is mounted on top of the compound rest and allows a maximum of four ½" x ½" tools to be loaded simultaneously.

The four-way tool post allows for quick indexing to new tools. This is accomplished by loosening the top handle, then rotating the tool post to the desired position. Tighten the top handle to lock the tool into position.

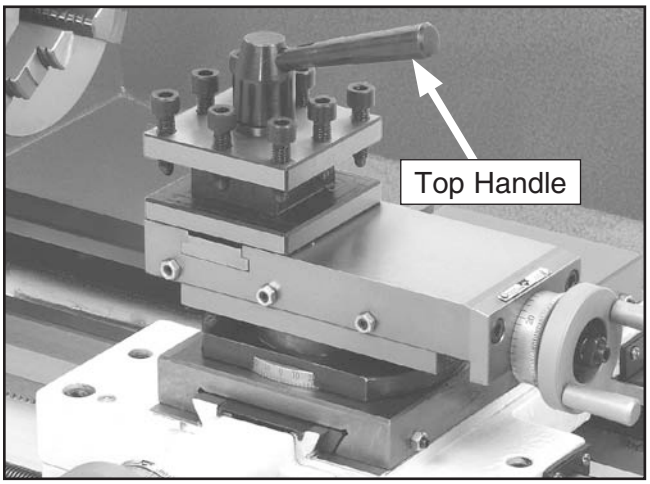


Figure 28. Four-way tool post and top handle.

Manual Feed Handwheels

You can manually move the cutting tool around the workpiece using the three handwheels shown in **Figure 29**.

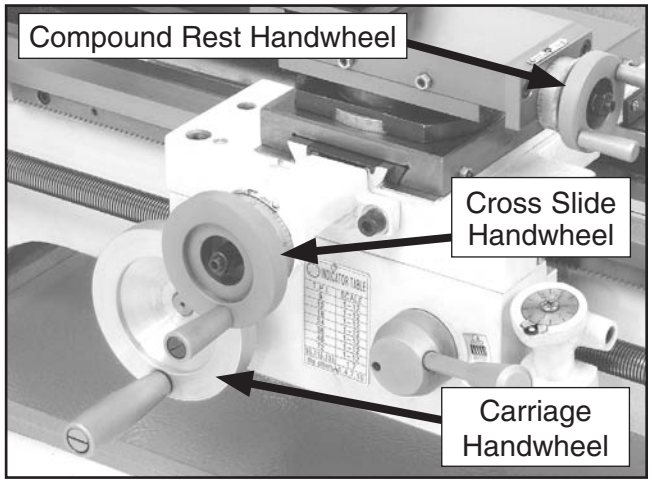


Figure 29. Manual handwheel controls.

Compound Rest Handwheel

The compound rest handwheel controls the position of the cutting tool relative to the workpiece. The graduated dial on the handwheel indicates the depth of compound rest movement. The angle adjustment is held by two hex nuts on the base of the compound rest.

Cross Slide Handwheel

The cross slide handwheel moves the top slide toward and away from the workpiece. Turning the handwheel clockwise moves the slide toward the workpiece. The graduated dial on the handwheel indicates the depth of cross slide movement.

Carriage Handwheel

The carriage handwheel moves the carriage left or right along the bed. This control is helpful when setting up the machine for turning or when manual movement is desired during turning operations.

Determining Correct Spindle Speed

⚠WARNING

Failure to follow RPM and feed rate guidelines may threaten operator safety from ejected parts or broken tools.

To determine the correct spindle RPM:

1. Use the table **Figure 30** to determine the cutting speed required for the material of your workpiece.

Cutting Speeds for High Speed Steel (HSS) Cutting Tools	
Workpiece Material	Cutting Speed (sfm)
Aluminum & alloys	300
Brass & Bronze	150
Copper	100
Cast Iron, soft	80
Cast Iron, hard	50
Mild Steel	90
Cast Steel	80
Alloy Steel, hard	40
Tool Steel	50
Stainless Steel	60
Titanium	50
Plastics	300-800
Wood	300-500

Note: *For carbide cutting tools, double the cutting speed. These values are a guideline only.* Refer to the *MACHINERY'S HANDBOOK* for more detailed information.

Figure 30. Cutting speed table for HSS cutting tools.

2. Measure the diameter of your workpiece in inches and subtract the depth of the cut that will be taken on the initial pass.

3. Use the formula in **Figure 31** to determine the needed RPM for your operation.

   Note: Always round to the closest RPM given on the spindle speed chart, and adjust your speed as the workpiece diameter decreases.

$$\frac{\text{(SFM) x 4}}{\text{1" Diameter}} = \text{RPM}$$

Figure 31. Formula to determine required spindle speed for lathes.

Example 1

You have a piece of ½" diameter aluminum stock, and you are using workpiece with a HSS cutting tool.

Step 1:
300 (SFM from chart) x 4 = 1200

Step 2:
1200 / 0.5" (Diameter of workpiece) = 2400 RPM

Result:
The needed speed for this workpiece is 2400 RPM.

Example 2

You have a piece of 1" diameter stainless steel stock, and you are using a workpiece with a carbide cutting tool.

Step 1:
60 (SFM from chart) x 2 (for carbide tool) = 120

Step 2:
120 (determined SFM) x 4 = 480

Step 3:
480 / 1" (Diameter of workpiece) = 480 RPM

Result:
The needed speed for this workpiece is 480 RPM.

Setting Spindle Speed

This lathe has six possible spindle speeds. Shown in **Figure 32** is an example of how you would use the chart to get a spindle RPM of 150.

To set the spindle RPM:

1. DISCONNECT THE LATHE FROM POWER!

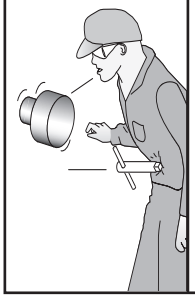
2. Refer to the RPM chart in **Figure 32** and determine which pulley combination you will need to get a particular spindle RPM.

3. Open the side cover, and using a 17mm wrench, loosen the tensioner lock nut located on the other side of the gear cover plate and the headstock.

4. Move the tensioner to install the low range belt between pulleys **B** and **C** and in sheave **1** as shown in **Figure 32**.

   Note: *The Low range belt is always used on pulleys **B** and **C** with the tensioner. This belt is 27.5" long. The high range belt is always used on pulleys **A** and **C** without using the tensioner. This belt is 33" long.*

5. Re-tension the belt with the tensioner, and close the side cover and secure it shut with the cap screw. The lathe is now ready to use at your chosen RPM.

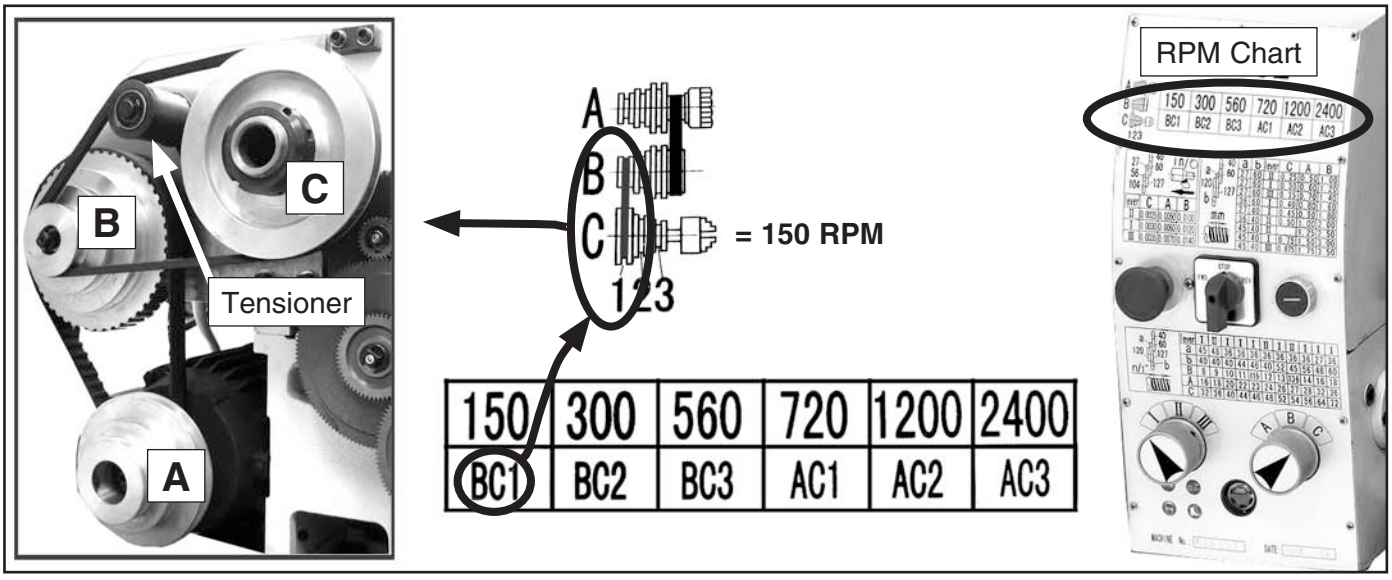


⚠WARNING

Use a lower RPM when machining heavy eccentric workpieces; securely clamp your workpiece and remove the chuck key! Objects thrown from a lathe can cause serious injury or death to the operator or bystanders.

⚠WARNING

Use a minimum of three independent clamping devices when turning eccentric workpieces on the faceplate. Failure to provide adequate clamping will cause workpiece to eject.



150	300	560	720	1200	2400
BC1	BC2	BC3	AC1	AC2	AC3

Figure 32. Pulley combination (BC1) achieves 150 RPM at the spindle.

Setting Power Feed Rate

Use these steps to learn how to setup your lathe for power fed operation. The example in **Figure 34** shows lathe setup for a power feed rate of 0.012". Remember, all the carriage direction is reversed when spindle rotation is reversed.

NOTICE

Feed rate is based on spindle RPM. Pay close attention to the feed rate you have chosen and be ready to disengage the carriage. Failure to do this may cause the carriage to crash into the chuck.

To set and engage the power feed:

1. DISCONNECT LATHE FROM POWER!

2. Turn the feed dials to the numeral and letter indicated by the chart in **Figure 34**.

   Note: *You may have to rock the chuck by hand slightly to get the gearbox gears to engage one another.*

3. Using the chart in **Figure 34**, gather the required change gears.

4. Open the side cover and use a 6mm hex wrench to loosen the lash adjuster (**Figure 34**) and swing the change gear assembly out of the way.

5. Remove the spindle E-clips and cap screw, lubricate, and swap out the change gears in the order shown on the chart in **Figure 34.**

   Note: *All change gears are stamped with the number of teeth they have.*

6. Move the lash adjuster so the gear backlash is between 0.003" to 0.008", tighten the lash adjuster cap screw, and close the side cover.

7. Using a 5mm hex wrench, loosen the carriage lock (**Figure 33**), and use the half nut lever to engage and disengage the power feed when required.

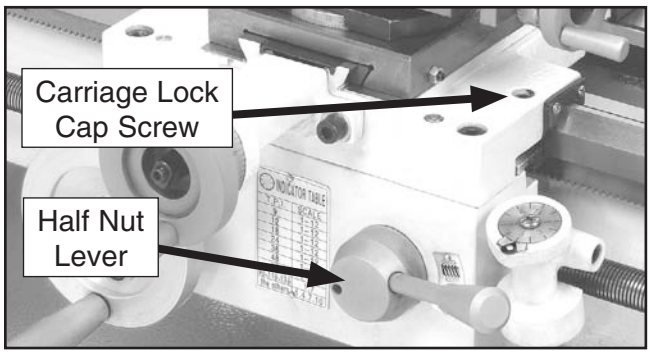


Figure 33. Carriage lock and feed control.

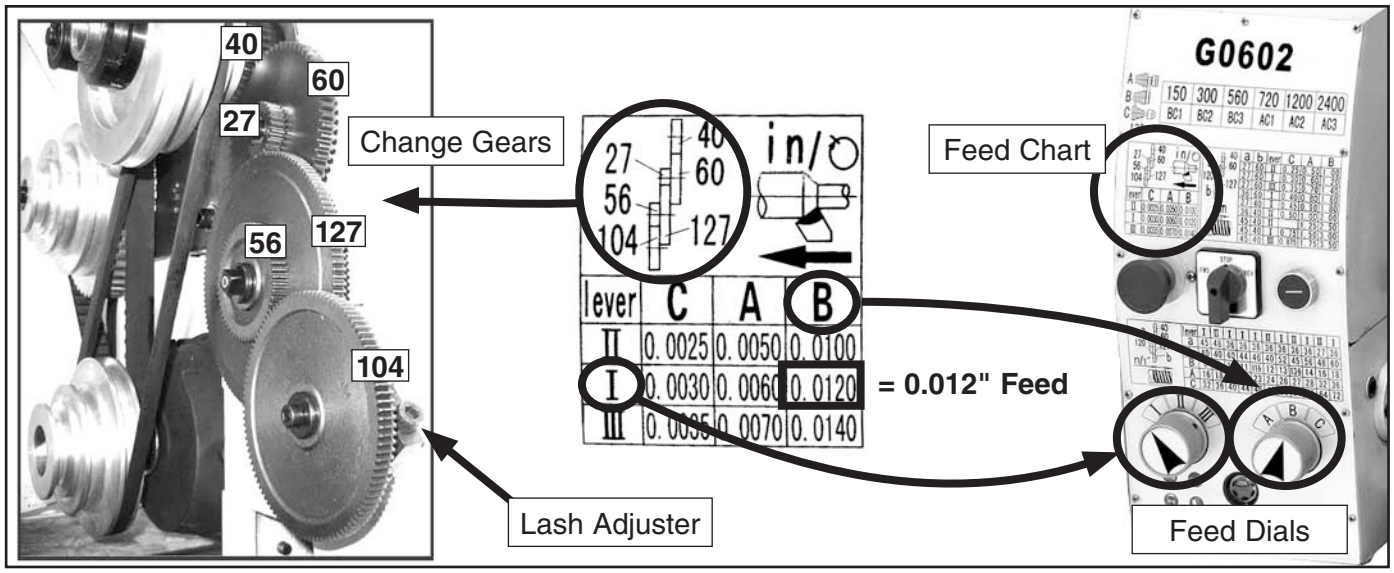


Figure 34. Power feed setup.

Inch Threads

Use these steps to learn how to setup your lathe for inch threading. The example in **Figure 36** shows lathe setup for cutting 64 TPI (Teeth Per/ Inch) thread.

To setup for inch threading:

1. DISCONNECT THE LATHE FROM POWER!

2. Turn the feed dials to the numeral and letter indicated by the chart in **Figure 36**.

   Note: *You may have to rock the chuck by hand slightly to get the gearbox gears to engage one another.*

3. Using the chart in **Figure 36**, gather the required change gears.

4. Open the side cover and use a 6mm hex wrench to loosen the lash adjuster (**Figure 34**) and swing the change gear assembly out of the way.

5. Remove the spindle E-clips and cap screw, lubricate, and swap out the change gears in the order shown on the chart in **Figure 34.**

   Note: *All change gears are stamped with the number of teeth they have.*

6. Move the lash adjuster so the gear backlash is between 0.003" to 0.008", tighten the lash adjuster cap screw, and close the side cover.

7. Using a 5mm hex wrench, make sure the carriage lock is loose (**Figure 33**).

8. The lathe is now setup for threading.

NOTICE

During threading keep your hand on the half-nut lever ready to disengage the half nut to avoid potential carriage/chuck crash.

Note: *For faster threading and manual carriage return, based on which TPI being cut, refer to the* ***Indicator Table*** *in* ***Figure 35*** *to know if you can use the thread dial scale to show when to re-enter the thread manually after disengaging the half nut lever.*

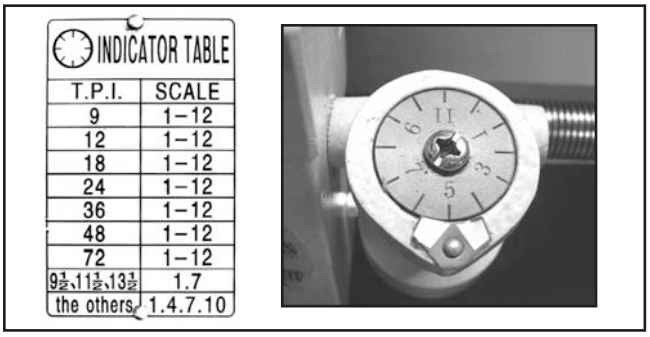


Figure 35. Thread dial chart and thread dial.

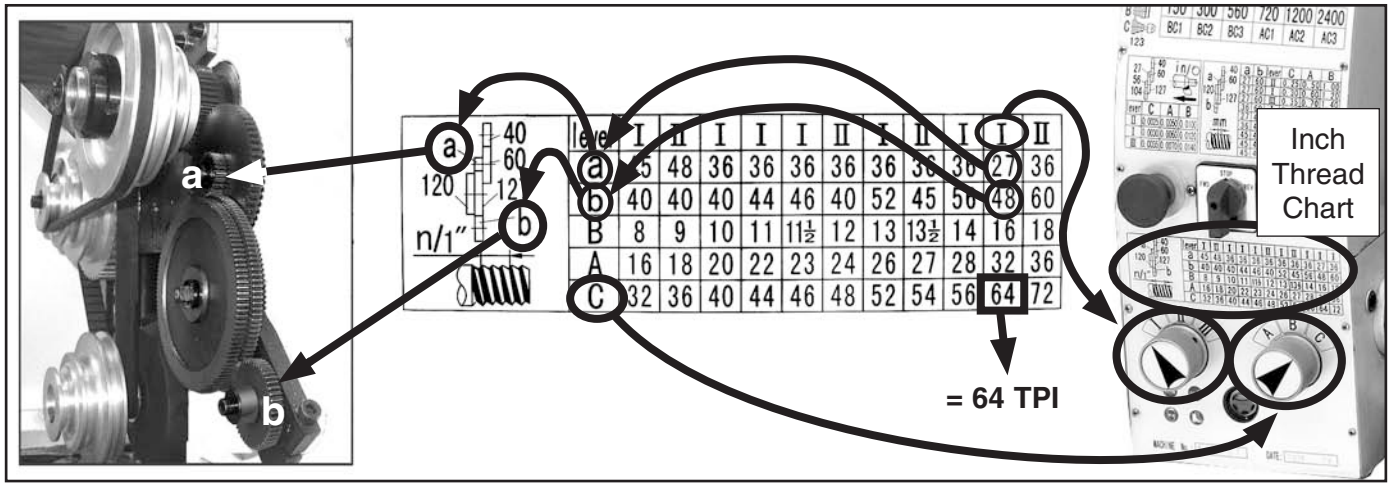


Figure 36. Inch threading setup.

Metric Threads

Use these steps to learn how to setup your lathe for metric threading. The example in **Figure 37** shows lathe setup for cutting a metric thread pitch of 0.45mm.

To setup for metric threading:

1. DISCONNECT THE LATHE FROM POWER!

2. Turn the feed dials to the numeral and letter indicated by the chart in **Figure 37**.

   Note: *You may have to rock the chuck by hand slightly to get the gearbox gears to engage one another.*

3. Using the chart in **Figure 36**, gather the required change gears.

4. Open the side cover and use a 6mm hex wrench to loosen the lash adjuster (**Figure 34**) and swing the change gear assembly out of the way.

5. Remove the spindle E-clips and cap screw, lubricate, and swap out the change gears in the order shown on the chart in **Figure 34.**

   Note: *All change gears are stamped with the number of teeth they have.*

6. Move the lash adjuster so the gear backlash is between 0.003" to 0.008", tighten the lash adjuster cap screw, and close the side cover.

7. Using a 5mm hex wrench, make sure the carriage lock is loose (**Figure 33**).

8. The lathe is now setup for threading.

NOTICE

During threading keep your hand on the half-nut lever ready to disengage the half nut to avoid potential carriage/chuck crash.

Note: *Since this lathe has an Inch lead screw, do not use the thread dial when cutting metric threads. Instead you must leave the half nut engaged until the threading operation is totally complete.*

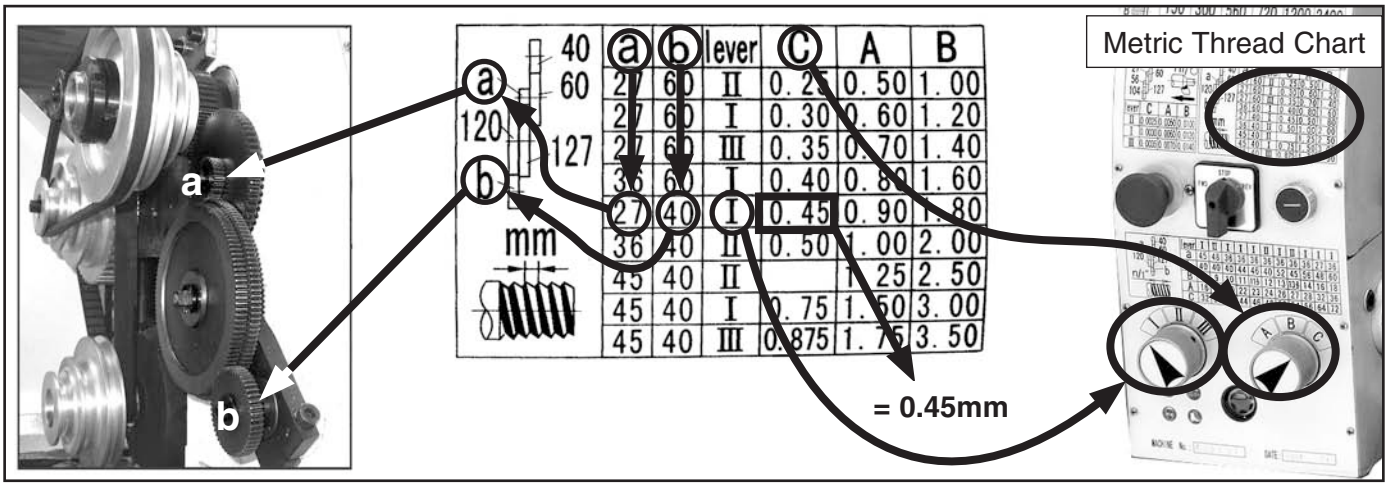


Figure 37. Metric threading setup.

SECTION 5: ACCESSORIES

WARNING

Some aftermarket accessories can be installed on this machine that could cause it to function improperly, increasing the risk of serious personal injury. To minimize this risk, only install accessories recommended for this machine by Grizzly.

NOTICE

Refer to the newest copy of the Grizzly Catalog for other accessories available for this machine.

Call 1-800-523-4777 To Order

G5639—5-Pc. Indexable Carbide Tool Set
G6706—Replacement TiN Coated Carbide Indexable Insert

Five-piece turning tool set features indexable carbide inserts with "spline" type hold-down screw that allow indexing without removing the screw. Each set includes AR, AL, BR, BL, and E style tools with carbide inserts, hex wrench, extra hold-down screws and a wooden case.

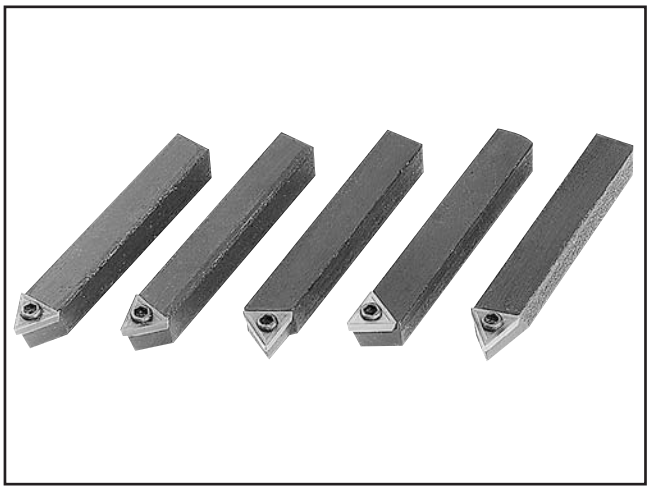


Figure 38. G5640 5 Pc. Indexable Tool Set.

G1076—52-PC. Clamping Kit

This clamping kit includes 24 studs, 6 step block pairs, 6 T-nuts, 6 flange nuts, 4 coupling nuts, and 6 end hold-downs. The rack is slotted so it can be mounted close to the machine for easy access.

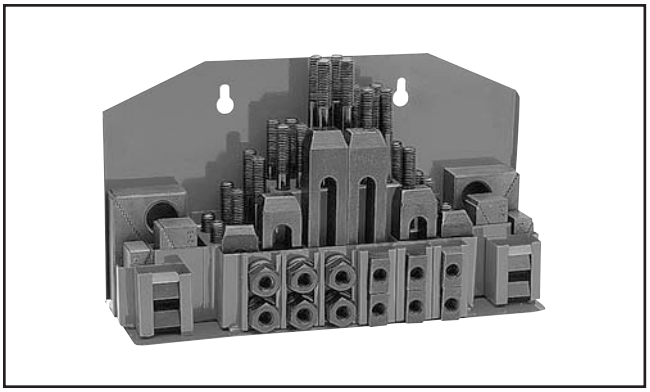


Figure 39. G1076 52-PC. Clamping Kit.

G5562—SLIPIT® 1 Qt. Gel
G5563—SLIPIT® 12 oz Spray
G2871—Boeshield® T-9 12 oz Spray
G2870—Boeshield® T-9 4 oz Spray
H3788—G96® Gun Treatment 12 oz Spray
H3789—G96® Gun Treatment 4.5 oz Spray

Figure 40. Recommended products for protecting unpainted cast iron/steel areas.

SECTION 6: MAINTENANCE

Basic Maintenance

Regular periodic maintenance of your lathe will ensure optimum performance. Make a habit of inspecting your machine each time you use it.

Check for the following conditions and repair or replace when necessary:

- Loose mounting bolts and chuck.
- Worn switch or safety features.
- Worn or damaged cords or plug.
- Any other condition that could hamper the safe operation of this machine.

General Lubrication

Make sure to unplug the lathe before lubrication and cleaning.

Keep the gearbox oil level at ¾ full as shown by the sight glass (**Figure 41**). After break-in, change the oil in the gearbox with Mobil® DTE® Heavy-Medium or an equivalent grade of oil, then again after three months. After that, change the oil at the same time on an annual basis or more frequently if extreme machine use requires it.

Figure 41. Headstock oil level sight glass.

For daily lubrication, use a manual oil gun with a general 10W machine oil to lubricate the 11 ball oilers. Refer to **Figures 42-45** for ball oiler locations. Make sure you wipe off the fittings before you oil them.

To control surface rust on machined surfaces, wipe the unprotected metal as required with a rust inhibiting oil.

Never blow the lathe off with compressed air, otherwise you will force metal shavings deep into mechanisms. Use a shop vacuum instead. Never use acetone, gasoline, or lacquer thinner to remove stains or oil from painted surfaces. These chemicals will melt the paint. Use mineral spirits or mild household degreasers.

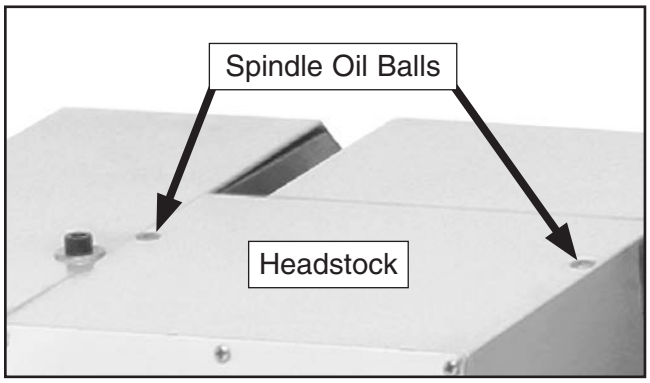


Figure 42. Spindle ball oilers in headstock.

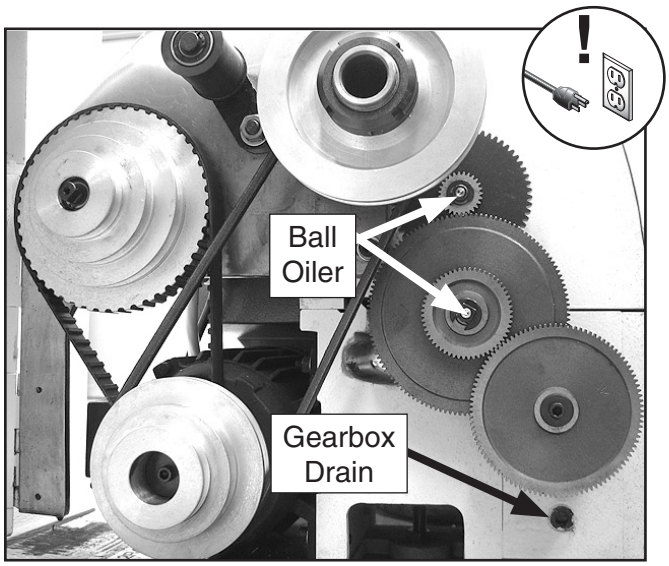


Figure 43. Change gear ball oilers and gearbox drain.

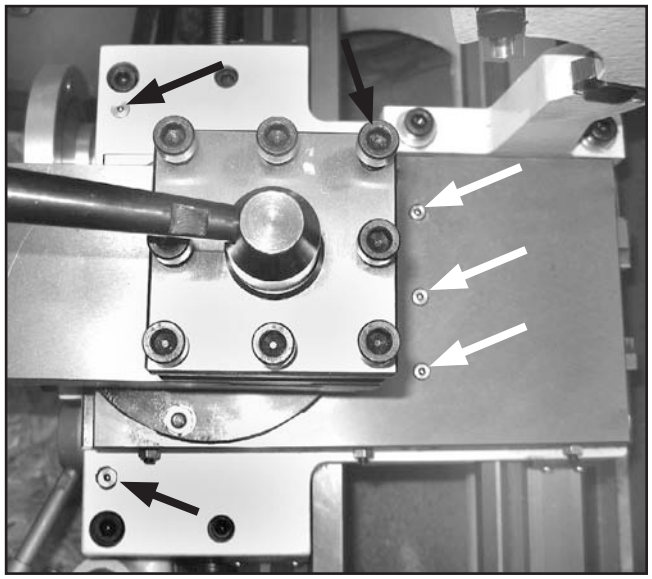


Figure 44. Apron and carriage ball oilers.

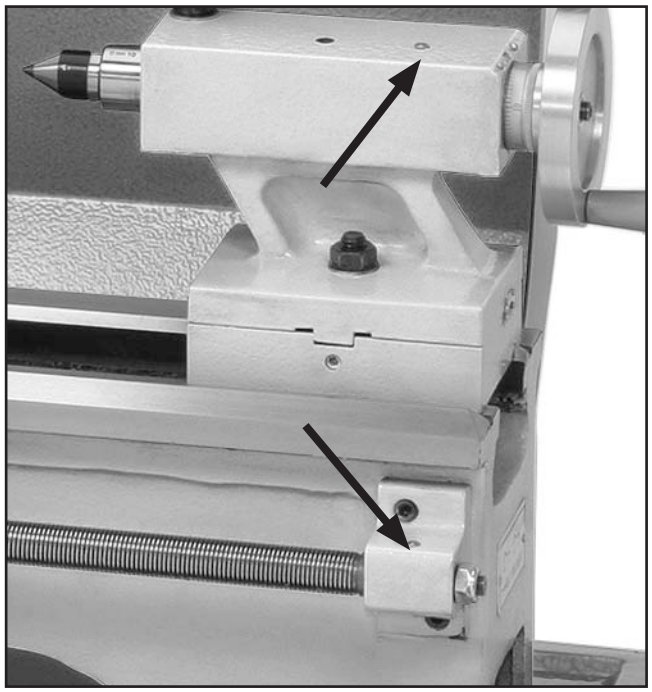


Figure 45. Leadscrew and tailstock ball oilers.

Belt Adjustment or Replacement

To replace or adjust the V-belts:

1. DISCONNECT POWER TO THE LATHE!

2. Open the side access door to expose the belt, pulleys, and change gears.

   —If the high range belt (**Figure 46**) needs to be replaced, carefully roll the belt off of pulleys **A** and **C** and reinstall the new one.

   —If the low range belt (**Figure 47**) needs to be replaced, use the 17mm wrench to loosen the tensioner pulley arm that holds the pulley and replace the belt on pulleys **B** and **C.** Hold the tensioner pulley against the new belt so the belt is taught, and tighten the tensioner pulley in place.

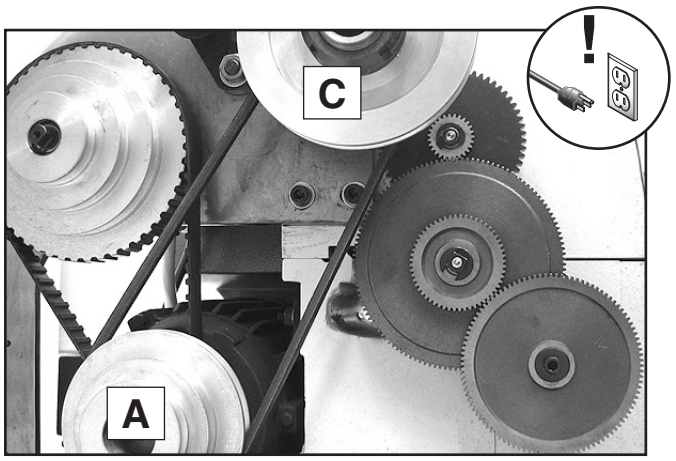


Figure 46. High-range belt position (A-C).

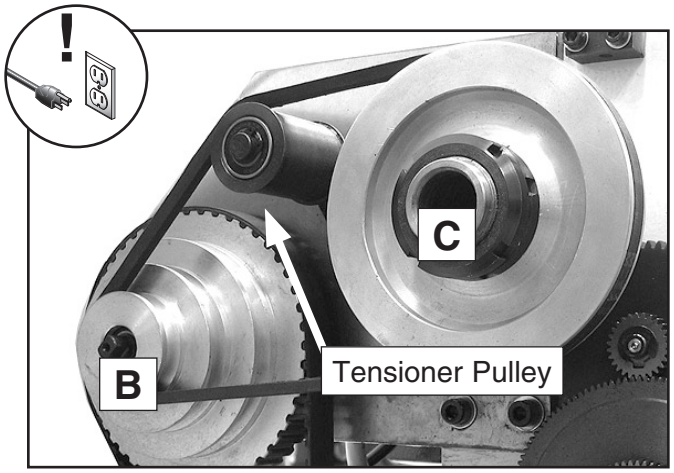
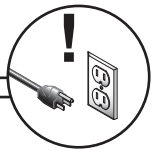


Figure 47. Low-range belt position (B-C).

SECTION 7: SERVICE

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support at (570) 546-9663.
Note: *Please gather the serial number and manufacture date of your machine before calling.*

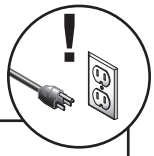
Troubleshooting



Motor & Gearbox

Symptom	Possible Cause	Possible Solution
Motor will not start.	1. Main power panel switch is ***OFF***. 2. Emergency switch is pushed in. 3. Circuit breaker or fuse has tripped. 4. No voltage or open connection. 5. Capacitor is at fault. 6. Motor direction switch is at fault. 7. Power switch or magnetic contactor is at fault. 8. Motor is at fault.	1. Turn the main power panel switch ***ON***. 2. Rotate emergency switch so it pops out. 3. Seek an electrician to troubleshoot and repair the shop power supply. 4. Test circuit, replace wires and connections as required. 5. Replace capacitor. 6. Replace switch. 7. Replace power switch or magnetic contactor. 8. Replace motor.
Fuses or circuit breakers trip open.	1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power supply.	1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Machine is loud belt slips when cutting. Overheats or bogs down in the cut.	1. Excessive depth of cut. 2. RPM or feed rate wrong for operation. 3. Dull cutters. 4. Belt is slipping. 5. Belt is at fault.	1. Decrease depth of cut. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace cutters. 4. Remove grease or oil on belt or pulleys/tighten belt tensioner against low range belt. 5. Replace belt.
Gear change levers will not shift into position.	1. Gears not aligned in headstock.	1. Rotate spindle by hand until gear falls into place.
Loud, repetitious noise coming from machine at or near the motor.	1. Pulley setscrews or keys are missing or loose. 2. Motor fan is hitting the cover.	1. Inspect keys and setscrews. Replace or tighten if necessary. 2. Tighten fan or shim cover, or replace items.
Motor is loud when cutting. Overheats or bogs down in the cut.	1. Excessive depth of cut or feed rate. 2. RPM or feed rate wrong for cutting operation. 3. Cutting tool is dull. 4. Gear setup is too tight, causing them to bind.	1. Decrease depth of cut or feed rate. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace the cutting tool. 4. Readjust the gear setup with a small amount of backlash so the gears move freely and smoothly when the chuck is rotated by hand.
Motor overheats.	1. Motor overloaded. 2. Air circulation through the motor restricted.	1. Reduce load on motor. 2. Clean out motor to provide normal air circulation.
Gear change levers will not shift into position.	1. Gears not aligned in headstock.	1. Rotate spindle by hand until gear falls into place.

Operation and Work Results



Symptom	Possible Cause	Possible Solution
Entire machine vibrates excessively upon startup and while running.	1. Workpiece is unbalanced. 2. Worn or broken gear present. 3. Chuck or faceplate has become unbalanced. 4. Spindle bearings at fault.	1. Reinstall workpiece so it is as centered with the spindle bore as possible. 2. Inspect gears and replace if necessary. 3. Rebalance chuck or faceplate; contact a local machine shop for help. 4. Tighten or replace spindle bearings.
Cutting tool or machine components vibrate excessively during cutting.	1. Tool holder not tight enough. 2. Cutting tool sticks too far out of tool holder; lack of support. 3. Gibs are out of adjustment. 4. Dull cutting tool. 5. Incorrect spindle speed or feed rate.	1. Check for debris, clean, and retighten. 2. Reinstall cutting tool so no more than 1/3 of the total length is sticking out of tool holder. 3. Tighten gib screws at affected component. 4. Replace or re sharpen cutting tool. 5. Use the recommended spindle speed.
Can't remove tapered tool from tailstock quill.	1. Quill had not retracted all the way back into the tailstock. 2. Debris was not removed from taper before inserting into quill.	1. Turn the quill handwheel until it forces taper out of quill. 2. Always make sure that taper surfaces are clean.
Cross slide, compound rest, or carriage feed has sloppy operation.	1. Gibs are out of adjustment. 2. Handwheel is loose. 3. Lead screw mechanism worn or out of adjustment.	1. Tighten gib screw(s). 2. Tighten handwheel fasteners. 3. Tighten any loose fasteners on lead screw mechanism.
Cross slide, compound rest, or carriage feed handwheel is hard to move.	1. Gibs are loaded up with shavings or grime. 2. Gib screws are too tight. 3. Backlash setting too tight (cross slide only). 4. Bedways are dry.	1. Remove gibs, clean ways/dovetails, lubricate, and readjust gibs. 2. Loosen gib screw(s) slightly, and lubricate bedways. 3. Slightly loosen backlash setting by loosening the locking screw and adjusting the spanner ring at the end of the handle. 4. Lubricate bedways and handles.
Bad surface finish.	1. Wrong RPM or feed rate. 2. Dull tooling or poor tool selection. 3. Too much play in gibs. 4. Tool too high.	1. Adjust for appropriate RPM and feed rate. 2. Sharpen tooling or select a better tool for the intended operation. 3. Tighten gibs. 4. Lower the tool position.
Inaccurate turning results from one end of the workpiece to the other.	1. Headstock and tailstock are not properly aligned with each other.	1. Realign the tailstock to the headstock spindle bore center line.
Chuck jaws won't move or don't move easily.	1. Chips lodged in the jaws.	1. Remove jaws, clean and lubricate chuck threads, and replace jaws.
Carriage won't feed, or hard to move.	1. Gears are not all engaged or broken. 2. Gibs are too tight. 3. Loose screw on the feed handle. 4. Lead screw shear pin has sheared.	1. Adjust gear positions or replace. 2. Loosen gib screw(s) slightly. 3. Tighten. 4. Correct for cause of shear pin breakage, and replace shear pin.
Tailstock quill will not feed out of tailstock.	1. Quill lock lever is tightened down.	1. Turn lever counterclockwise.

Cross Slide Backlash Adjustment

Backlash is the amount of play found in a lead screw. It can be found by turning the cross slide handwheel in one direction, then turning the handwheel the other direction. When the cross slide begins to move, the backlash has been taken up.

Note: *Avoid the temptation to overtighten the cross slide backlash screw. Overtightening will cause excessive wear to the sliding block and lead screw.*

Backlash is adjusted by tightening or loosening the screw shown in **Figure 48**.

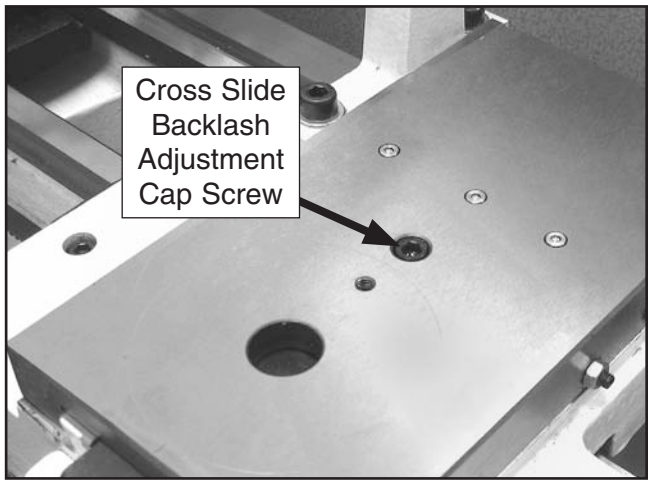


Figure 48. Cross slide backlash adjustment cap screw.

This screw draws a wedge-type nut against the lead screw and main nut. If it is too tight, loosen the screw a few turns and tap the cross slide a few times with a rubber or wooden mallet. Then turn the handle slowly back and forth until the handle turns freely. To readjust the backlash, rock the handle back and forth and tighten the screw slowly until the backlash is at between 0.001" to 0.002" as indicated on the handwheel.

Note: *Reducing backlash to less than 0.001" is impractical and reduces the life of the cross slide.*

Gib Adjustments

When adjusting gibs (**Figures 49 and 50**), the goal is to remove sloppiness in the ways without causing the slides or half nut to bind. Loose gibs will cause a poor finish on the workpiece and wear the slide. Tight gibs will damage the slide, lead screw, and half-nut. The cross slide gib is a tapered piece of iron. When the opposing front and rear gib adjustment screws are turned in opposing directions, the screws force the tapered gibs to fill the void in the way, thus tightening the play in the cross slide. If more play is needed turn the screws the other direction.

For the three saddle gibs, (**Figure 49**) loosen the jam nuts and turn the three set screws until slight tension is felt and the gib plates are slightly pre-loaded against the underside of the flat-way. Tighten the jam nuts when finished.

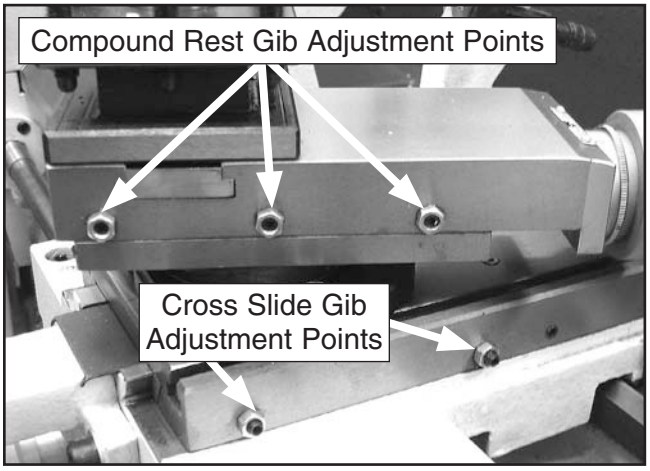


Figure 49. Gib adjustment points.

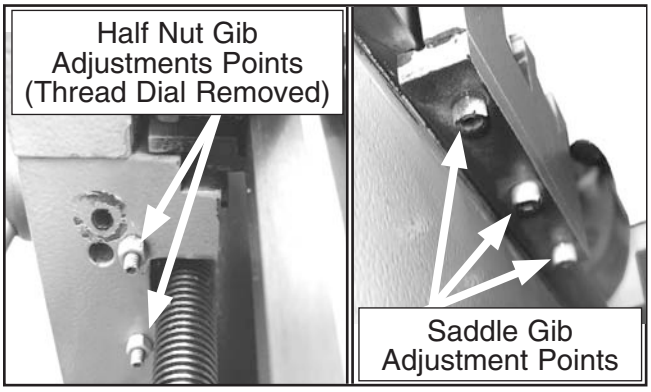


Figure 50. Half-nut saddle gib locations.

SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING
Wiring Safety Instructions

SHOCK HAZARD. Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

MODIFICATIONS. Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved aftermarket parts.

WIRE CONNECTIONS. All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

CIRCUIT REQUIREMENTS. You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

WIRE/COMPONENT DAMAGE. Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

CAPACITORS/INVERTERS. Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.grizzly.com.

COLOR KEY

BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu	TURQUOISE	Tu
RED	Rd	ORANGE	Or	PINK	Pk		

Electrical Component Connections

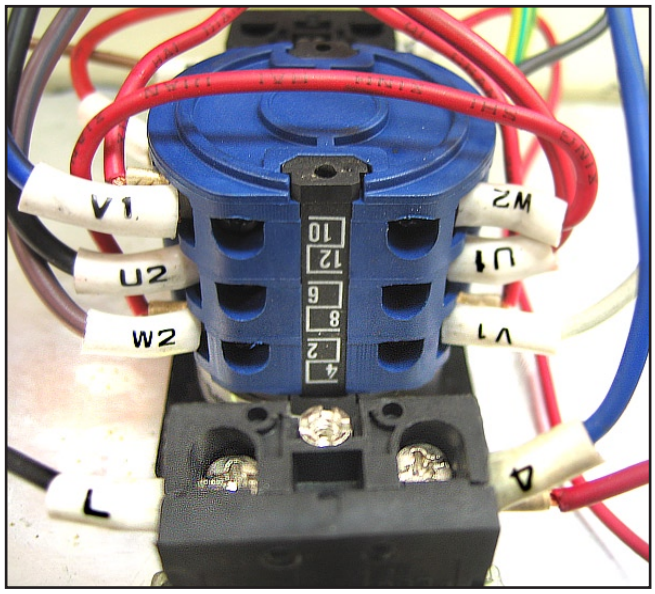


Figure 51. Motor rotary switch and ON power switch (SA and SB1).

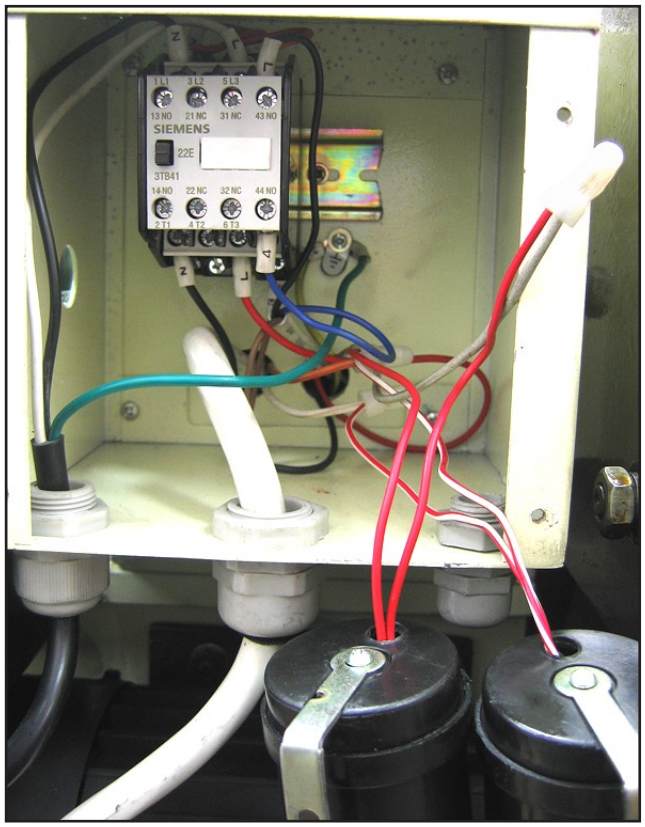


Figure 52. External motor capacitors.

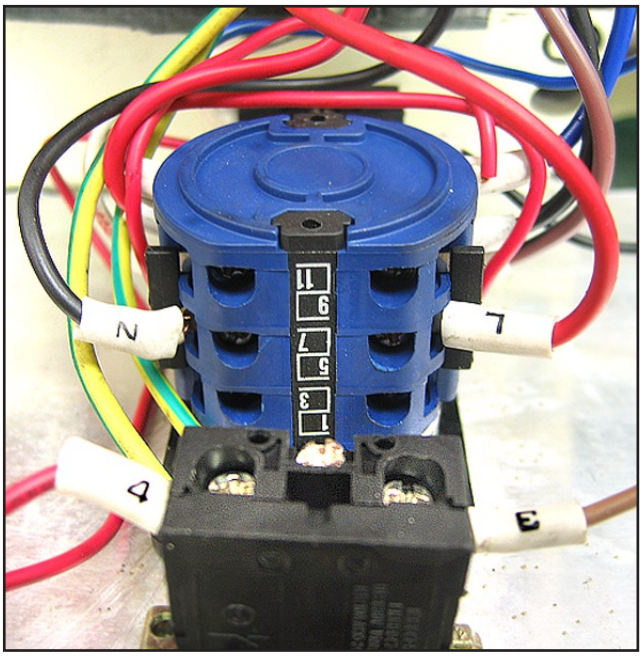


Figure 53. Motor rotary switch and emergency stop switch (SA and SB2).

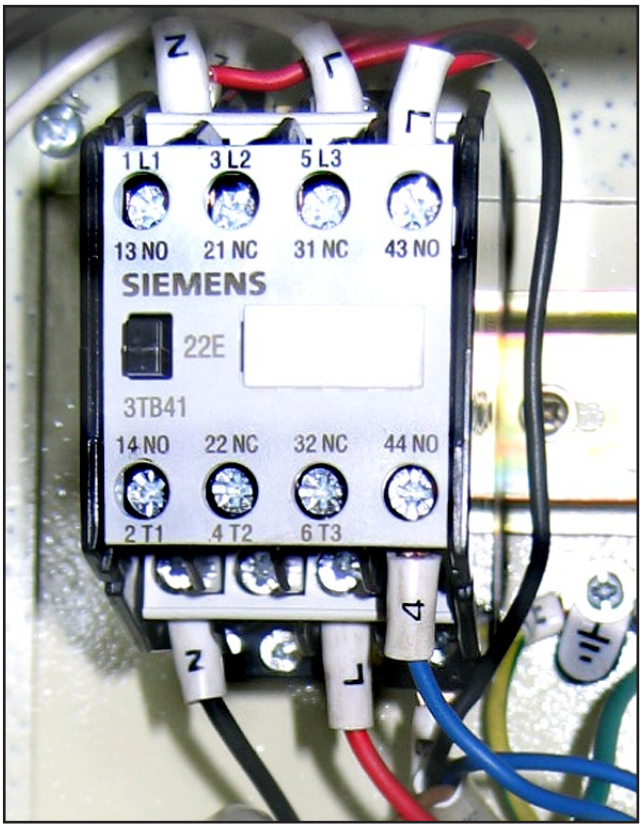


Figure 54. Motor start contactor.

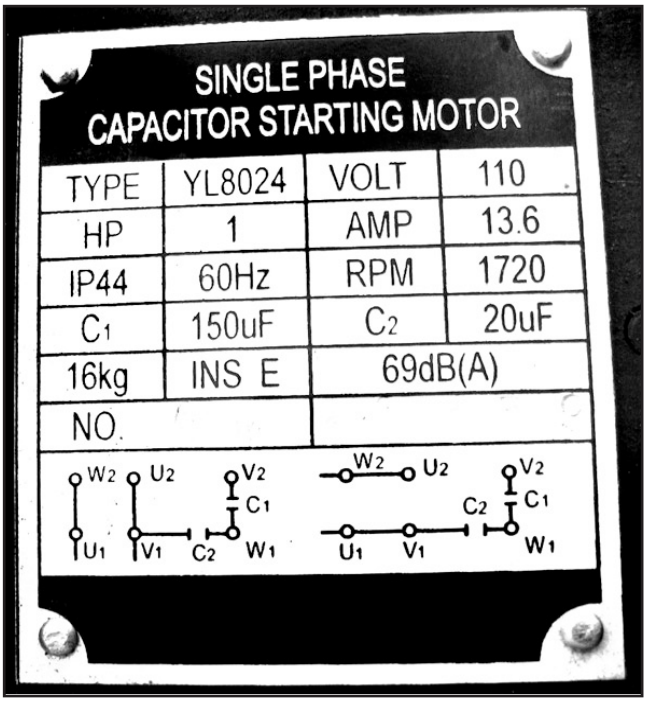


Figure 55. Motor data plate.

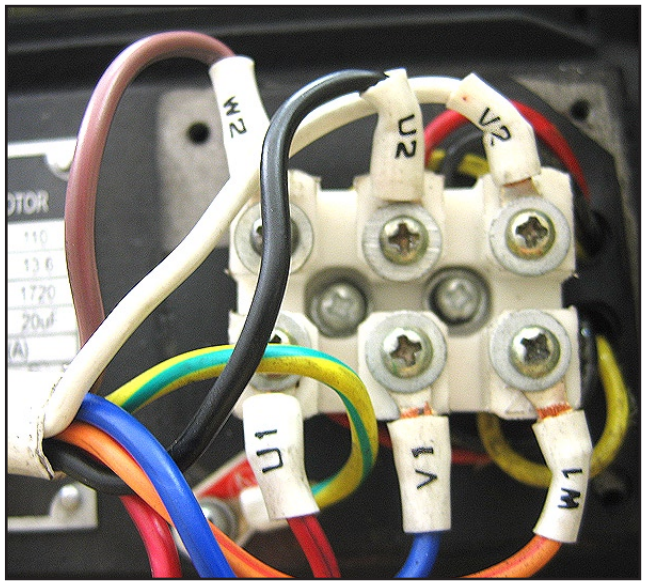
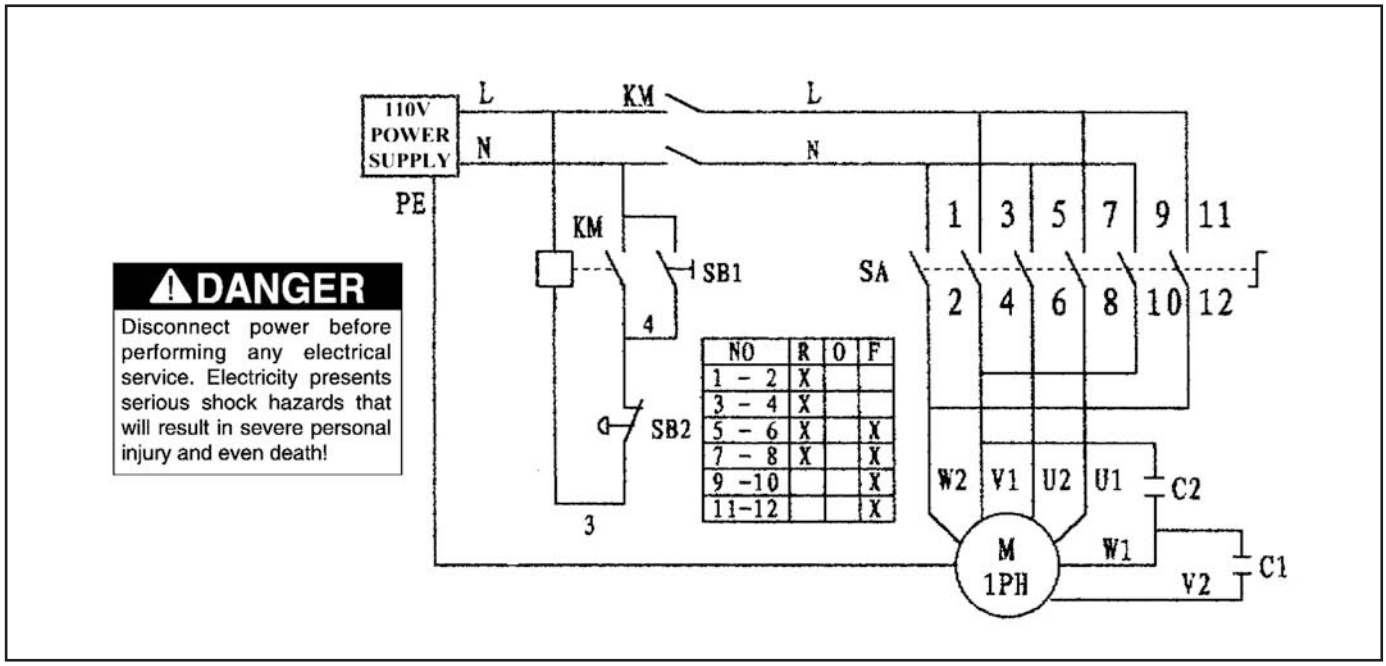


Figure 56. Motor connection detail.

Wiring Diagram

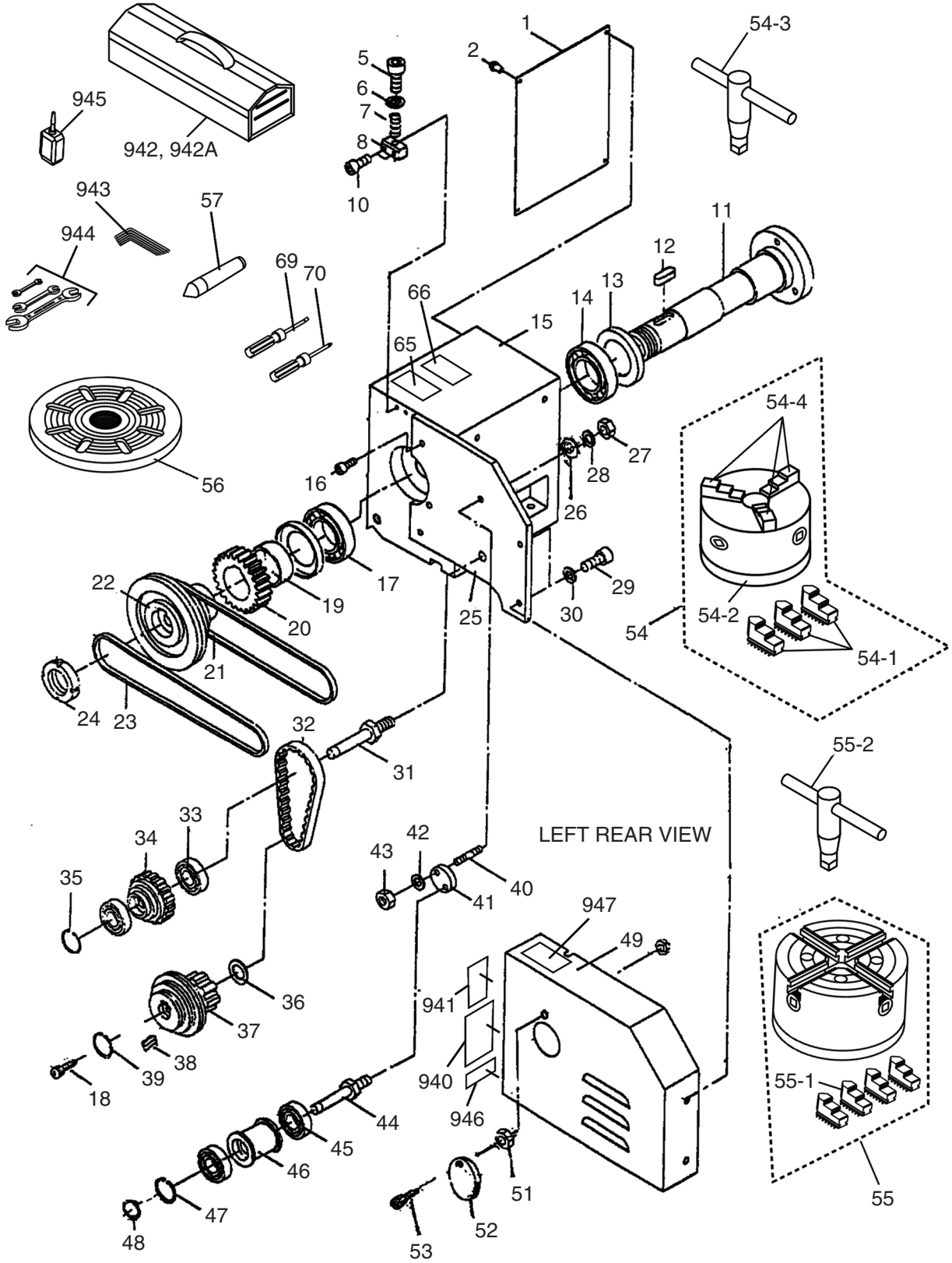


LEGEND

KM: Magnetic Contactor 110V	**C1: Capacitor**
SB1: ON Push Button Switch	**C2: Capacitor**
SB2: Emergency Stop Push Button Switch	**SA: Motor Direction Rotary Switch**
M: Motor 110V	

SECTION 9: PARTS

Spindle & Drive Belt

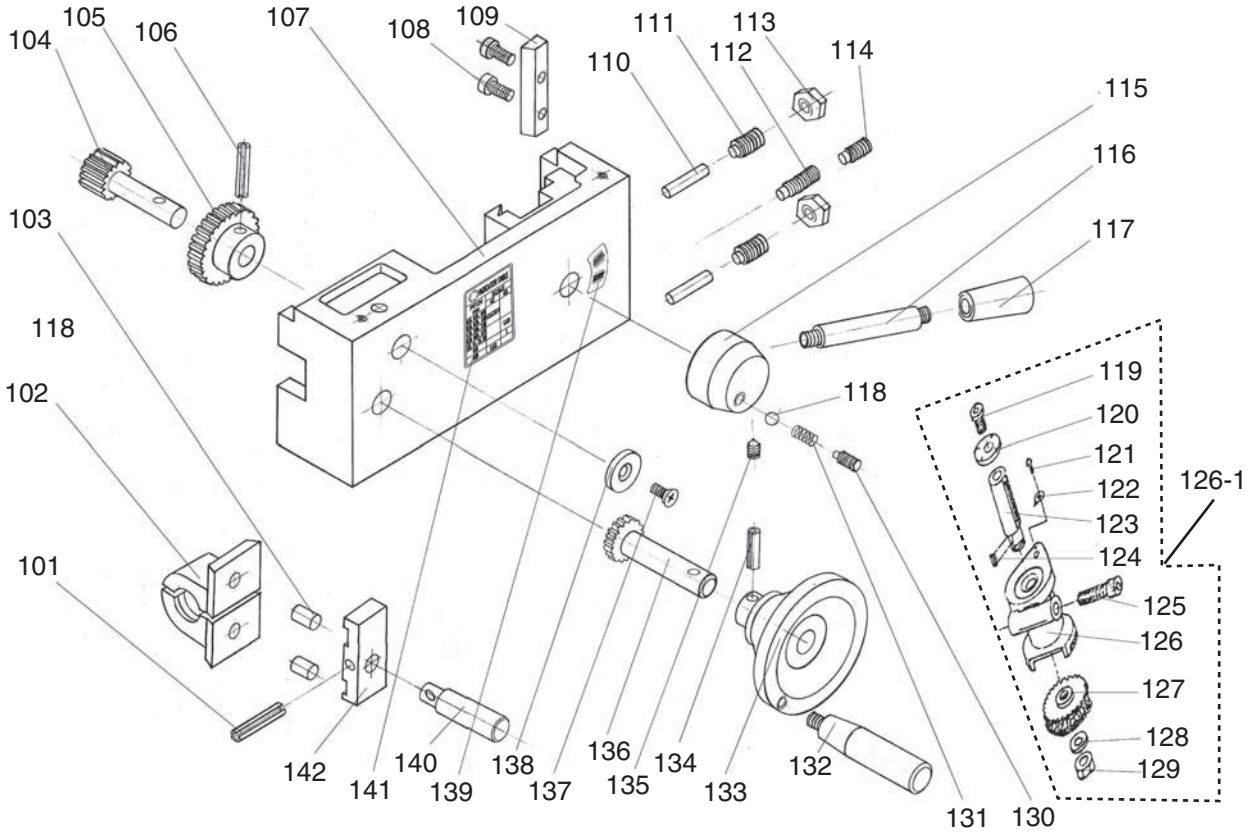


Spindle & Drive Belt Parts

REF	PART #	DESCRIPTION
1	P0602001	TERMINAL COVER
2	PS17M	PHLP HD SCR M4-.7 X 6
5	PSB06M	CAP SCREW M6-1 X 25
6	PW03M	FLAT WASHER 6MM
7	P0602007	COMPRESSION SPRING
8	P0602008	CLAMP
10	PSB06M	CAP SCREW M6-1 X 25
11	P0602011	SPINDLE
12	PK135M	KEY 10 X 10 X 55
13	P0602013	SPACER
14	P32009	TAPERED ROLLER BEARING 32009
15	P0602015	HEADSTOCK
16	PSB14M	CAP SCREW M8-1.25 X 20
17	P32009	TAPERED ROLLER BEARING 32009
18	PSB02M	CAP SCREW M6-1 X 20
19	P0602019	SPACER
20	P0602020	GEAR PLASTIC 40T
21	PVM27A	V-BELT M-27.5 3L275
22	P0602022	PULLEY
23	PVM33	V-BELT M-33 3L330
24	P0602024	SPANNER NUT M30 X 1.5
25	P0602025	BRACKET PLATE
26	PLW06M	LOCK WASHER 10MM
27	PN02M	HEX NUT M10-1.5
28	PW04M	FLAT WASHER 10MM
29	PSB50M	CAP SCREW M5-.8 X 10
30	PW02M	FLAT WASHER 5MM
31	P0602031	SPINDLE SHAFT
32	P0602032	COGGED BELT 263L
33	P6001	BALL BEARING 6001
34	P0602034	COGGED PULLEY
35	PR03M	EXT RETAINING RING 12MM
36	P0602036	SPACER
37	P0602037	COGGED PULLEY
38	PK11M	KEY 6 X 6 X 40
39	P0602039	SPACER

REF	PART #	DESCRIPTION
40	P0602040	STUD
41	P0602041	PLATE
42	PW04M	FLAT WASHER 10MM
43	PN02M	HEX NUT M10-1.5
44	P0602044	SPINDLE SHAFT
45	P0602045	BALL BEARING 12 X 28 X 8
46	P0602046	ROLLER
47	PR20M	INT RETAINING RING 28MM
48	PR03M	EXT RETAINING RING 12MM
49	P0602049	COVER
51	PN06M	HEX NUT M5-.8
52	P0602052	COVER
53	PS08M	PHLP HD SCR M5-.8 X 12
54	P0602054	CHUCK 3-JAW 5"
54-1	P0602054-1	CHUCK 3-JAW EXT JAWS 3PC
54-2	P0602054-2	CHUCK BACKPLATE
54-3	P0602054-3	CHUCK 3-JAW KEY
54-4	P0602054-4	CHUCK 3-JAW EXT JAWS 3PC
55	P0602055	CHUCK 4-JAW 6.5"
55-1	P0602055-1	CHUCK 4-JAW JAW 4PC
55-2	P0602055-2	CHUCK 4-JAW KEY
56	P0602056	FACEPLATE 8"
57	P0602057	DEAD CENTER MT#3
65	P0602065	ALUM READ MANUAL LABEL
66	P0602066	ALUM WEAR SAFETY GLASSES LABEL
69	P0602069	STANDARD SCREWDRIVER #1
70	P0602070	PHILLIPS SCREWDRIVER #1
940	P0602940	ALUM MACHINE ID LABEL
941	P0602941	ALUM ENTANGLEMENT LABEL
942	P0602942	TOOL BOX
942A	P0602942A	COMPLETE TOOL BOX ASSEMBLY
943	P0602943	HEX WRENCH SET (2.5,3,4,5,6MM)
944	P0602944	WRENCH SET (8-10, 12-14, 17-19MM)
945	P0602945	OIL BOTTLE
946	P0602946	ALUM SHIFT NOTICE LABEL
947	P0602947	ALUM DISCONNECT POWER LABEL

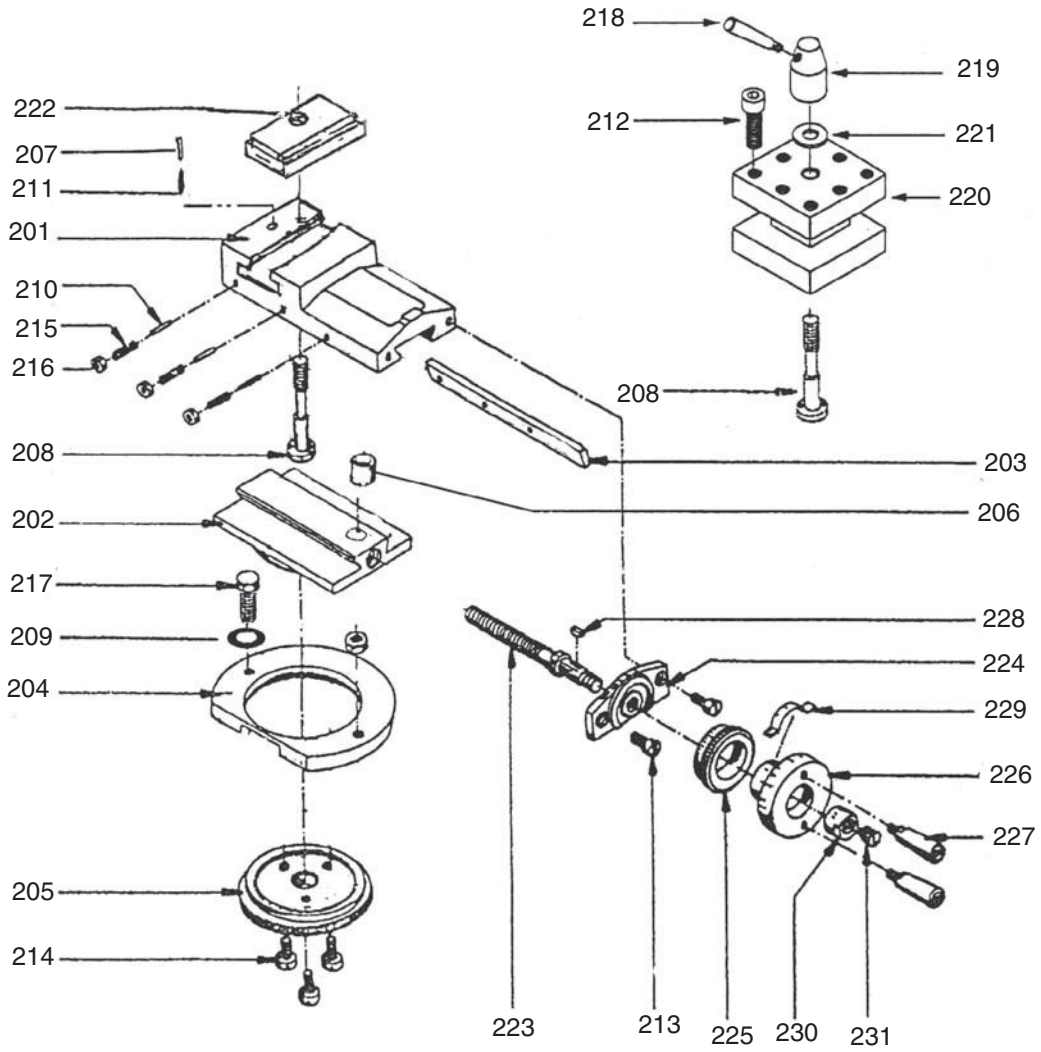
Apron



REF	PART #	DESCRIPTION
101	PRP19M	ROLL PIN 4 X 14
102	P0602102	HALF NUT
103	PRP59M	ROLL PIN 5 X 12
104	P0602104	GEAR SHAFT
105	P0602105	GEAR
106	PRP73M	ROLL PIN 4 X 30
107	P0602107	APRON CASTING
108	PSB23M	CAP SCREW M4-.7 X 12
109	P0602109	GIB
110	PRP76M	ROLL PIN 4 X 16
111	PSS34M	SET SCREW M5-.8 X 16
112	PSS12M	SET SCREW M6-1 X 25
113	PN06M	HEX NUT M5-.8
114	PSS04M	SET SCREW M6-1 X 12
115	P0602115	LEVER HUB
116	P0602116	LEVER
117	P0602117	LEVER HANDLE
118	P0602118	STEEL BALL
119	PSB85M	CAP SCREW M6-1 X 6
120	P0602120	DIAL
121	PRIV001M	STEEL FLUTED RIVET 2 X 5MM
122	P0602122	POINTER

REF	PART #	DESCRIPTION
123	P0602123	SHAFT
124	PK39M	KEY 3 X 3 X 10
125	PSB83M	CAP SCREW M6-1 X 55
126	P0602126	THREAD DIAL BODY
126-1	P0602126-1	COMPLETE DIAL ASSY
127	P0602127	SIDE GEAR 48T
128	PW01M	FLAT WASHER 8MM
129	PN03M	HEX NUT M8-1.25
130	PSS02M	SET SCREW M6-1 X 6
131	P0602131	COMPRESSION SPRING
132	P0602132	HANDLE
133	P0602133	HANDWHEEL
134	PRP04M	ROLL PIN 4 X 24
135	P0602135	POINTED SET SCR M6-1 X 12
136	P0602136	GEAR SHAFT
137	PFH43M	FLAT HD SCR M6-1 X 10
138	PW03M	FLAT WASHER 6MM
139	P0602139	INDICATOR PLATE
140	P0602140	SHAFT
141	P0602141	THREADED DIAL PLATE
142	P0602142	LOCK CAM

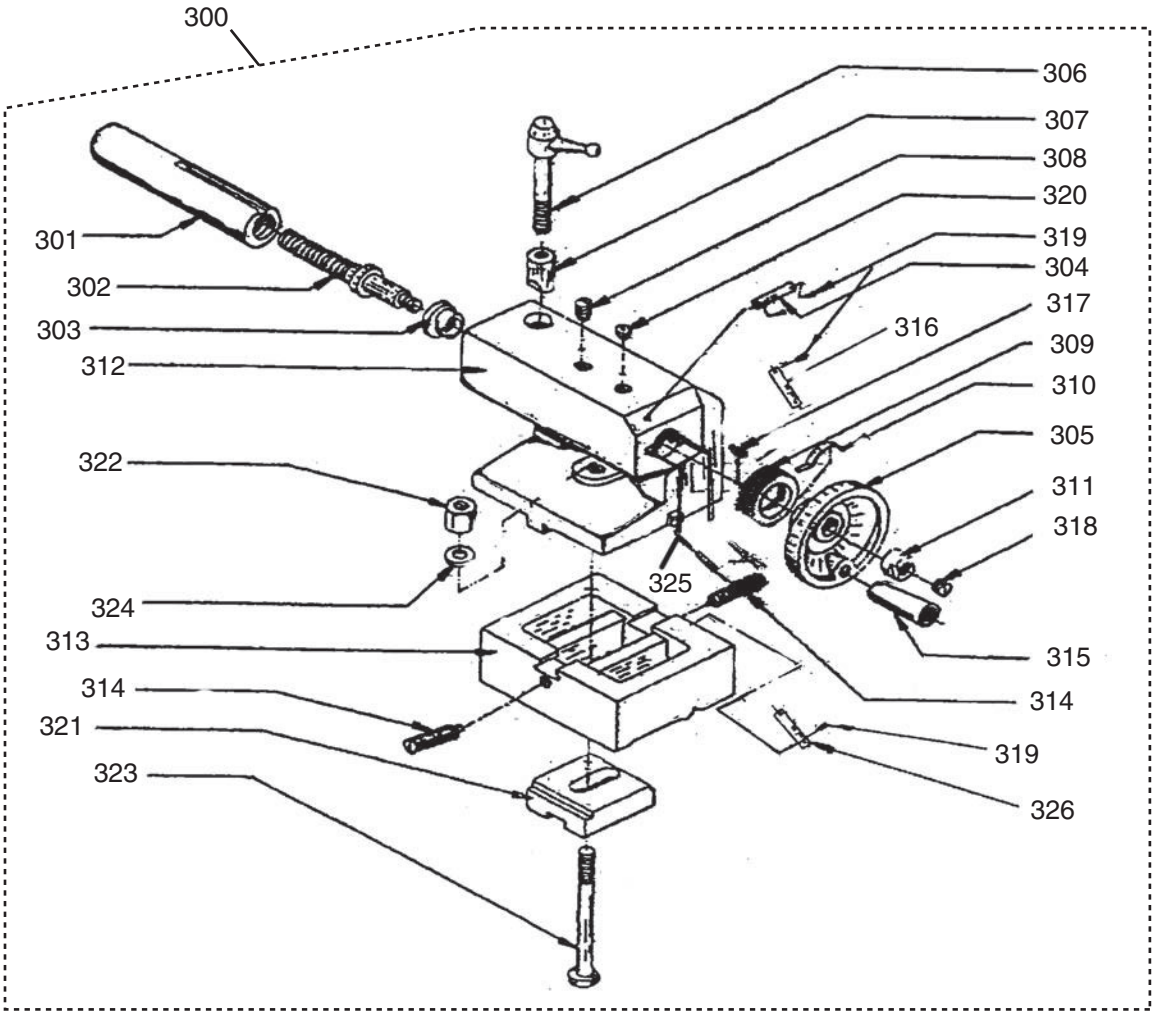
Tool Holder & Compound Rest



REF	PART #	DESCRIPTION
201	P0602201	COMPOUND SLIDE
202	P0602202	SWIVEL BASE
203	P0602203	GIB
204	P0602204	CLAMPING RING
205	P0602205	GRADUATED DIAL
206	P0602206	BARREL NUT
207	P0602207	DOWEL PIN
208	P0602208	TOOL POST STUD
209	PW01M	FLAT WASHER 8MM
210	P0602210	DOWEL PIN
211	P0602211	COMPRESSION SPRING
212	P0602212	BULLNOSE CAP SCR M8-1.25 X 29
213	PSB31M	CAP SCREW M8-1.25 X 25
214	PSB26M	CAP SCREW M6-1 X 12
215	PSS34M	SET SCREW M5-.8 X 16
216	PN06M	HEX NUT M5-.8
216	PN06M	HEX NUT M5-.8

REF	PART #	DESCRIPTION
217A	PSS19M	SET SCREW M8-1.25 X 30
217A-1	PN03M	HEX NUT M8-1.25
218	P0602218	HANDLE
219	P0602219	HANDLE HUB
220	P0602220	TOOL REST
221	P0602221	RUB SPACER
222	P0602222	SLIDE PLATE
223	P0602223	LEADSCREW
224	P0602224	LEADSCREW MOUNT
225	P0602225	GRADUATED DIAL
226	P0602226	HANDWHEEL
227	P0602227	HANDLE
228	PK03M	KEY 3 X 3 X 8
229	P0602229	POINTER
230	P0602230	THREADED COLLAR
231	PSS17M	SET SCREW M8-1.25 X 6

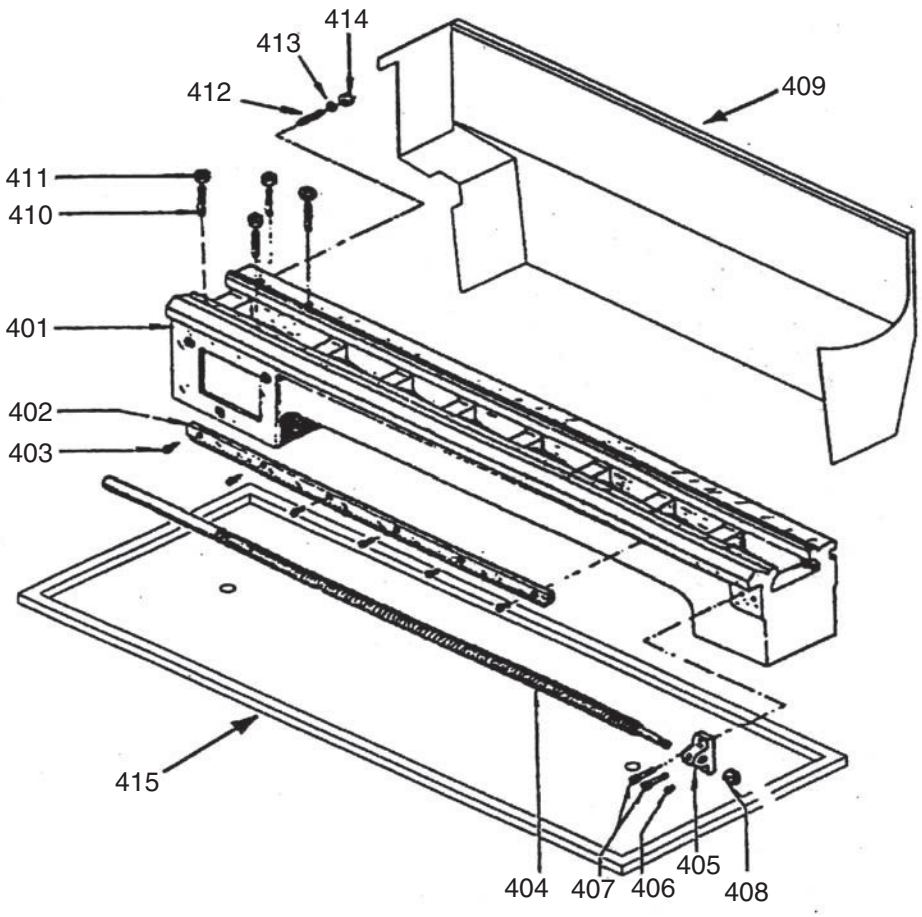
Tailstock



REF	PART #	DESCRIPTION
300	P0602300	COMPLETE TAILSTOCK ASSY
301	P0602301	TAILSTOCK QUILL
302	P0602302	LEADSCREW
303	P0602303	BUSHING
304	P0602304	HANDWHEEL SCALE PLATE
305	P0602305	HANDWHEEL
306	P0602306	LEVER BOLT M12-1.75 X 50
307	P0602307	BARREL NUT
308	PSS04M	SET SCREW M6-1 X 12
309	P0602309	GRADUATED DIAL
310	P0602310	POINTER
311	P0602311	WASHER
312	P0602312	TAILSTOCK BODY
313	P0602313	TAILSTOCK BASE

REF	PART #	DESCRIPTION
314	PSS21M	SET SCREW M8-1.25 X 25
315	P0602315	HANDLE
316	P0602316	OFFSET SCALE PLATE
317	P0602317	KEY
318	PLN05M	LOCK NUT M10-1.5
319	P0602319	RIVET 2 X 5
320	P0602320	BALL OILER
321	P0602321	CLAMPING PLATE
322	PN09M	HEX NUT M12-1.75
323	PB158M	HEX BOLT M12-1.75 X 90
324	PW06M	FLAT WASHER 12MM
325	PSS26M	SET SCREW M5-.8 X 6
326	P0602326	PLATE

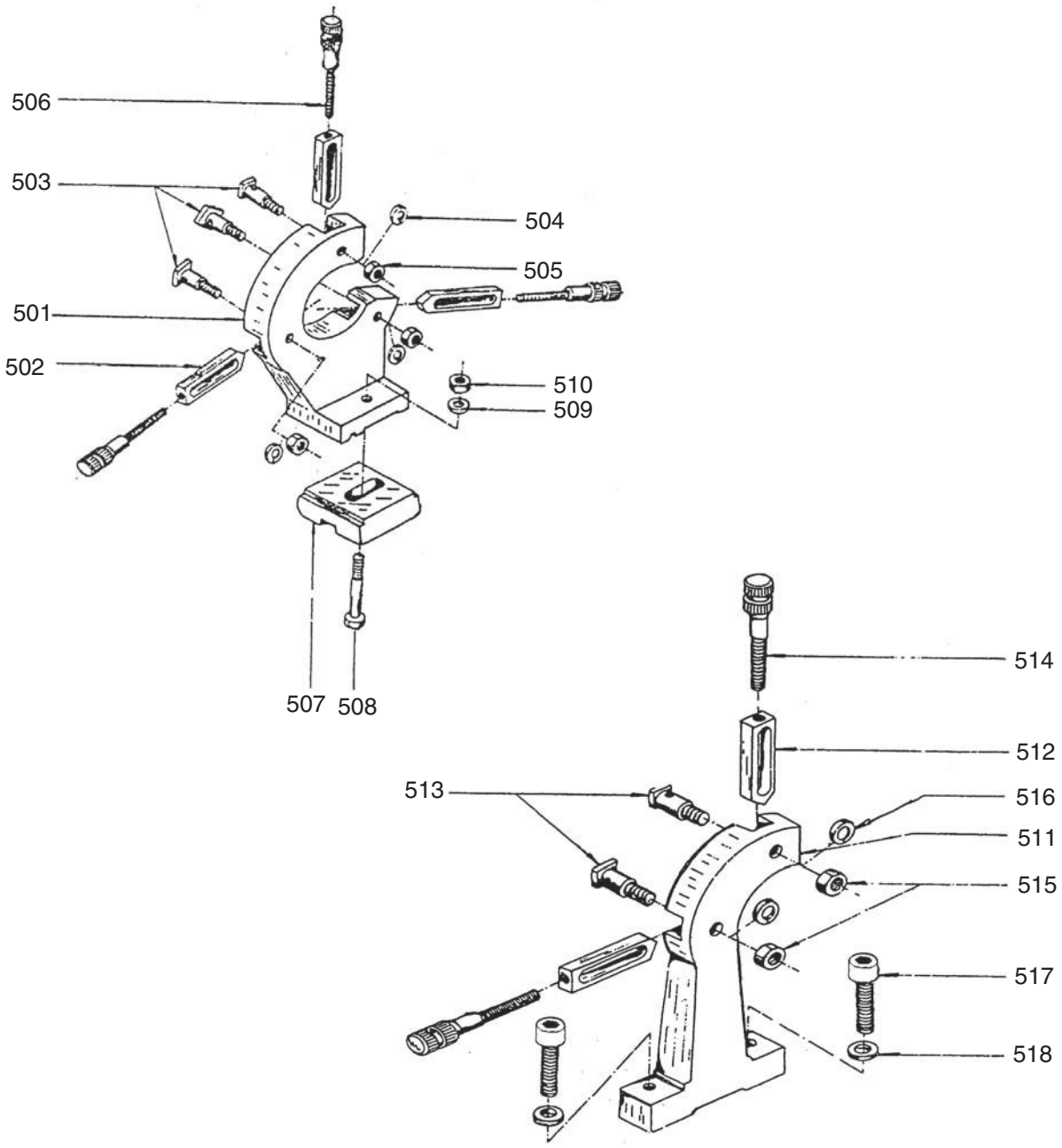
Bed & Leadscrew



REF	PART #	DESCRIPTION
401	P0602401	BED
402	P0602402	RACK
403	PSB33M	CAP SCREW M5-.8 X 12
404	P0602404	LEADSCREW
405	P0602405	BRACKET
406	P0602406	BALL OILER
407	PSB02M	CAP SCREW M6-1 X 20
408	PLN05M	LOCK NUT M10-1.5

REF	PART #	DESCRIPTION
409	P0602409	SPLASH GUARD
410	P0602410	STUD M10-1.5 X 35
411	PN02M	HEX NUT M10-1.5
412	PSS44M	SET SCREW M8-1.25 X 40
413	PW01M	FLAT WASHER 8MM
414	PN03M	HEX NUT M8-1.25
415	P0602415	CHIP PAN

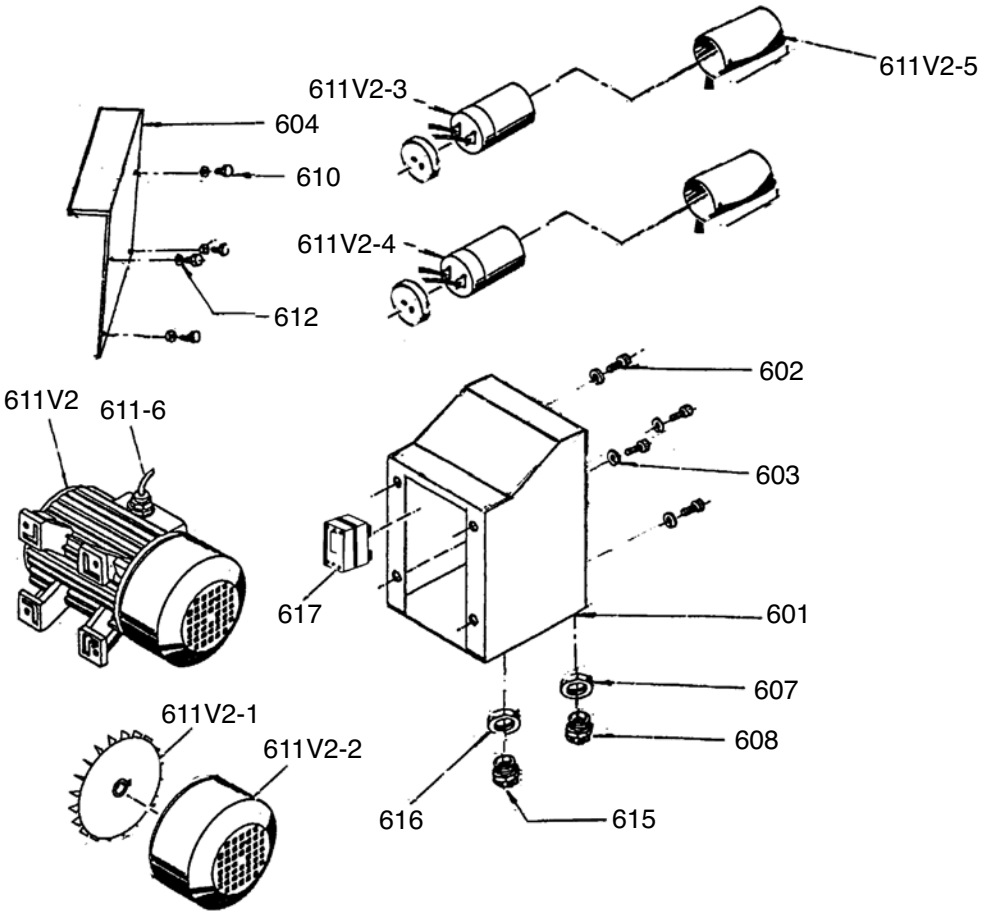
Steady Rest & Follow Rest



REF	PART #	DESCRIPTION
501	P0602501	STEADY REST CASTING
502	P0602502	FINGER
503	P0602503	SHOULDER T-BOLT
504	PLW03M	LOCK WASHER 6MM
505	PN01M	HEX NUT M6-1
506	P0602506	ADJUSTING SCREW
507	P0602507	CLAMPING PLATE
508	PB125M	HEX BOLT M12-1.75 X 65
509	PW04M	FLAT WASHER 10MM

REF	PART #	DESCRIPTION
510	PN02M	HEX NUT M10-1.5
511	P0602511	FOLLOW REST CASTING
512	P0602512	FINGER
513	P0602513	SHOULDER T-BOLT
514	P0602514	ADJUSTING SCREW
515	PN01M	HEX NUT M6-1
516	PLW03M	LOCK WASHER 6MM
517	PSB40M	CAP SCREW M8-1.25 X 35
518	PW01M	FLAT WASHER 8MM

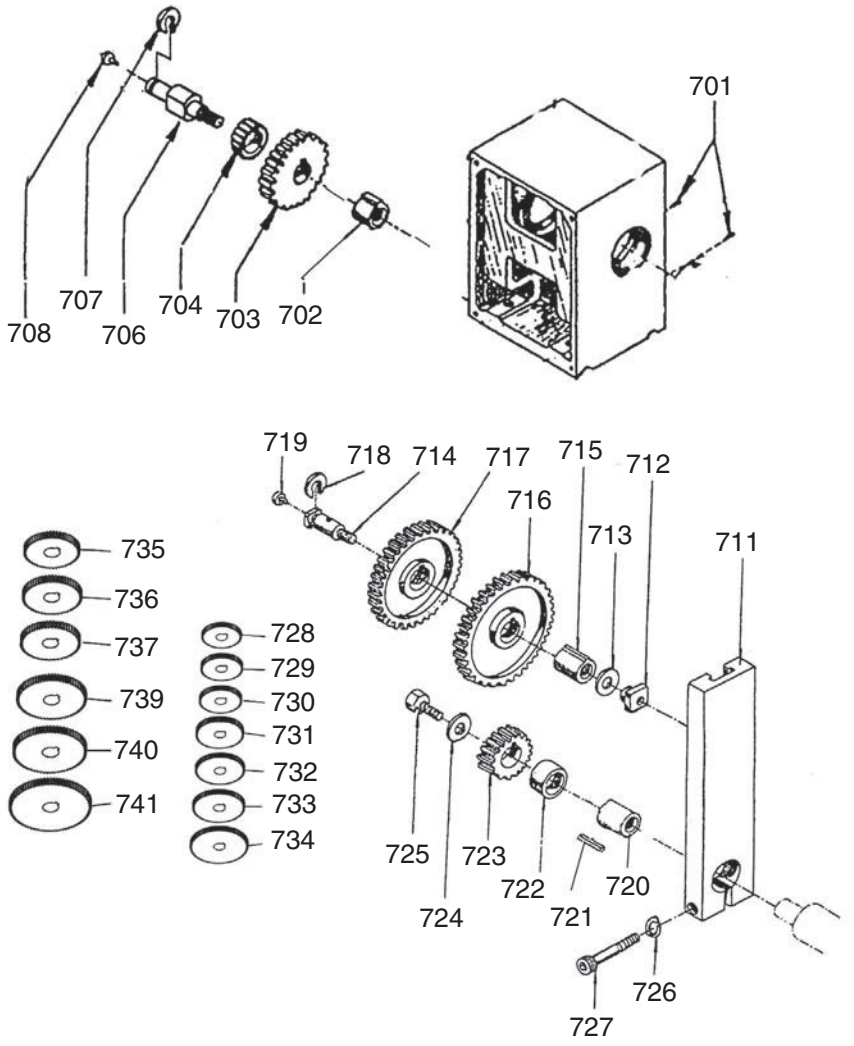
Motor & Electrical



REF	PART #	DESCRIPTION
601	P0602601	CABINET
602	PSB06M	CAP SCREW M6-1 X 25
603	PLW03M	LOCK WASHER 6MM
604	P0602604	COVER
607	P0602607	STRAINS RELIEF NUT
608	P0602608	STRAIN RELIEF
610	PS09M	PHLP HD SCR M5-.8 X 10
611	P0602611	MOTOR CAST IRON BODY V1.12.06
611-1	P0602611-1	FAN
611-2	P0602611-2	FAN COVER
611-3	P0602611-3	S CAPACITOR 150M 250V
611-4	P0602611-4	R CAPACITOR 20M 400V

REF	PART #	DESCRIPTION
611-5	P0602611-5	CAPACITOR COVER W/CAP
611-6	P0602611-6	POWER CORD
611V2	P0602611V2	MOTOR ALUMINUM BODY V2.09.08
611V2-1	P0602611V2-1	FAN V2.09.08
611V2-2	P0602611V2-2	FAN COVER V2.09.08
611V2-3	P0602611V2-3	S CAPACITOR 150M 125V V2.09.08
611V2-4	P0602611V2-4	R CAPACITOR 20M 400V V2.09.08
611V2-5	P0602611V2-5	CAPACITOR COVER V2.09.08
612	PLW03M	LOCK WASHER 6MM
615	P0602615	STRAIN RELIEF
616	P0602616	STRAIN RELIEF NUT
617	P0602617	CONTACTOR 3TB41 22E SIEMENS

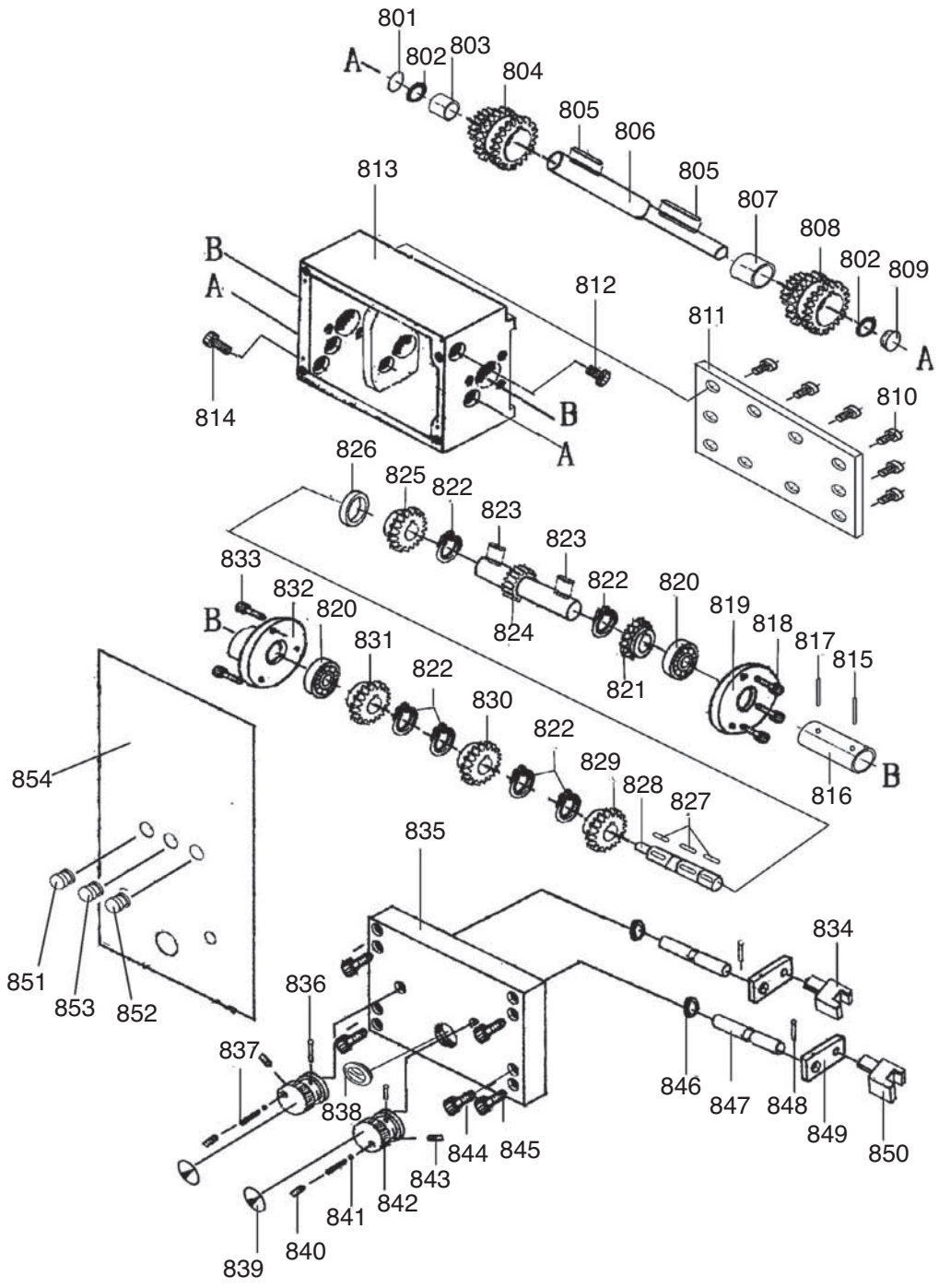
Gearbox Diagram A



REF	PART #	DESCRIPTION
701	PSS01M	SET SCREW M6-1 X 10
702	P0602715	BUSHING
703	P0602703	PLASTIC DRIVE GEAR 60T
704	P0602704	CAST-IRON GEAR 27T
706	P0602706	SHAFT
707	P0602707	E-CLIP
708	P0602708	BALL OILER
711	P0602711	BRACKET
712	P0602712	T-NUT
713	P0602713	SPACER WASHER
714	P0602714	SHAFT
715	P0602715	BUSHING
716	P0602716	GEAR 127T
717	P0602717	GEAR 56T
718	P0602718	E-CLIP
719	P0602719	BALL OILER
720	P0602720	BUSHING
721	PK134M	KEY 4 X 4 X 14
722	P0602722	SPACER RING

REF	PART #	DESCRIPTION
723	P0602723	GEAR 104T
724	PW03M	FLAT WASHER 6MM
725	PSB85M	CAP SCREW M6-1 X 6
726	PLW04M	LOCK WASHER 8MM
727	PSB12M	CAP SCREW M8-1.25 X 40
728	P0602728	CHAIN GEAR 36T
729	P0602729	CHAIN GEAR 36T
730	P0602730	CHAIN GEAR 40T
731	P0602731	CHAIN GEAR 44T
732	P0602732	CHAIN GEAR 46T
733	P0602733	CHAIN GEAR 48T
734	P0602734	CHAIN GEAR 52T
735	P0602735	CHAIN GEAR 45T
736	P0602736	CHAIN GEAR 56T
737	P0602737	CHAIN GEAR 60T
739	P0602739	CHAIN GEAR 104T
740	P0602740	CHAIN GEAR 120T
741	P0602741	CHAIN GEAR 127T

Gearbox Diagram B

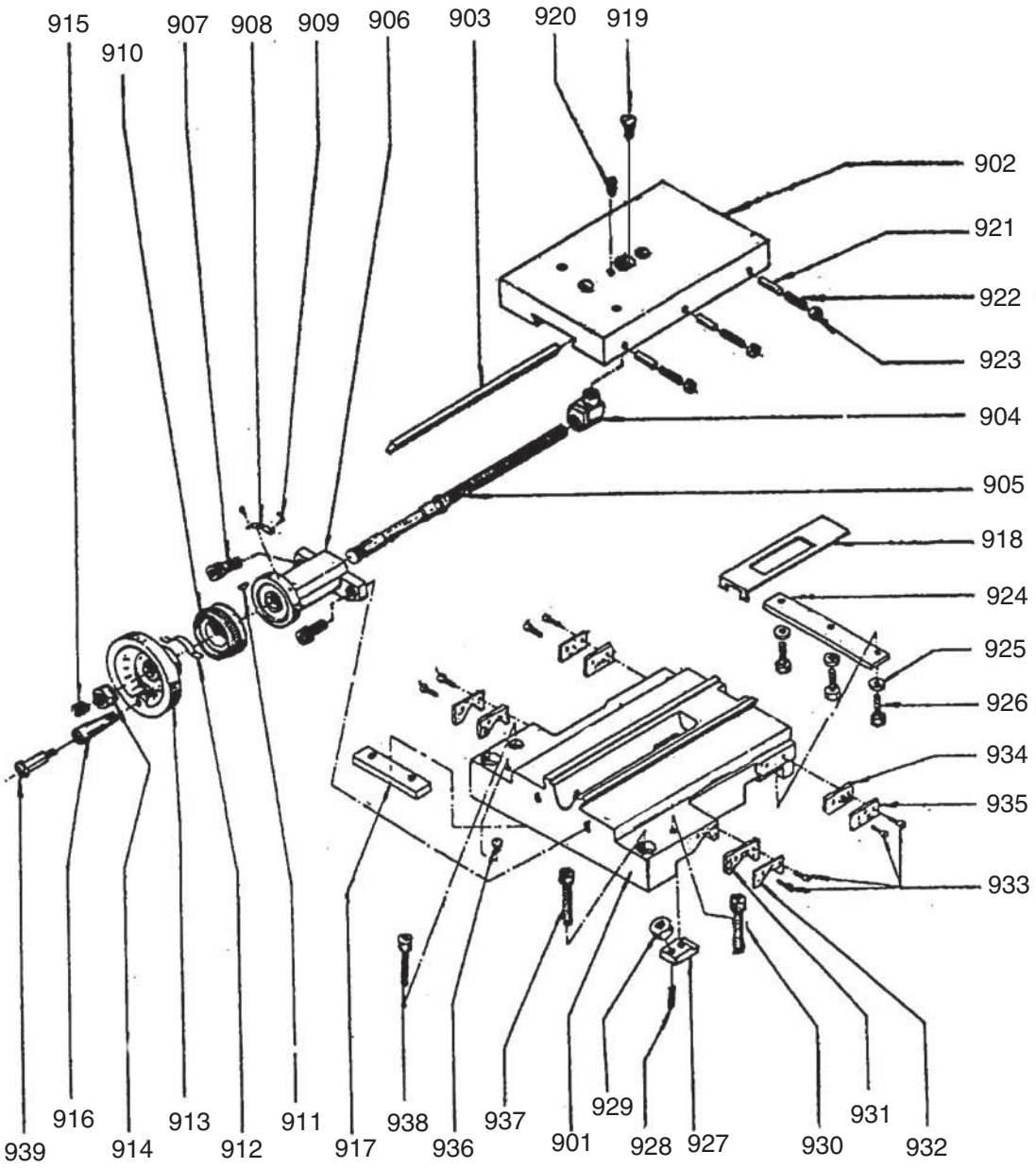


Gearbox Diagram B Parts

REF	PART #	DESCRIPTION
801	P0602801	PLUG
802	P0602802	O-RING
803	P0602803	BUSHING
804	P0602804	CLUSTER GEAR 30/36/33T
805	PK133M	KEY 4 X 4 X 50
806	P0602806	SHAFT
807	P0602807	BUSHING
808	P0602808	CLUSTER GEAR 22/44/33T
809	P0602809	PLUG
810	PSB50M	CAP SCREW M5-.8 X 10
811	P0602811	COVER
812	P0602812	PLUG
813	P0602813	GEAR BOX CASE
814	P0602814	DRAIN PLUG
815	P0602815	SHEAR PIN 5 X 20
816	P0602816	COLLAR
817	P0602817	SHEAR PIN 5 X 20
818	PSB26M	CAP SCREW M6-1 X 12
819	P0602819	FLANGE
820	P6202	BALL BEARING 6202
821	P0602821	GEAR 33T
822	P0602822	EXT RETAINING RING 12MM
823	PK29M	KEY 4 X 4 X 8
824	P0602824	GEAR SHAFT 22T
825	P0602825	GEAR 44T
826	P0602826	COLLAR
827	PK132M	KEY 4 X 4 X10
828	P0602828	SHAFT

REF	PART #	DESCRIPTION
829	P0602829	GEAR 33T
830	P0602830	GEAR 30T
831	P0602831	GEAR 35T
832	P0602832	FLANGE
833	PSB01M	CAP SCREW M6-1 X 16
834	P0602834	SHIFT FORK
835	P0602835	COVER
836	PRP05M	ROLL PIN 5 X 30
837	P0602837	COMPRESSION SPRING
838	P0602838	SIGHT GLASS
839	P0602839	POINTER DISK
840	PSS01M	SET SCREW M6-1 X 10
841	P0602841	STEEL BALL
842	P0602842	SHIFT HUB
843	PSS01M	SET SCREW M6-1 X 10
844	PSB37M	CAP SCREW M6-1 X 50
845	PSB02M	CAP SCREW M6-1 X 20
846	P0602846	O-RING
847	P0602847	SHAFT
848	PRP03M	ROLL PIN 5 X 20
849	P0602849	SHIFT LEVER
850	P0602850	SHIFT FORK
851	P0602851	EMERGENCY OFF SWITCH
852	P0602852	ON PUSH BUTTON SWITCH
853	P0602853	MOTOR ROTATION SWITCH
854	P0602854	CONTROL PANEL
855	P0602855	ALUM READ MANUAL LABEL
856	P0602856	ALUM SAFETY GLASSES LABEL

Cross Feed & Carriage



Cross Feed & Carriage Parts

REF	PART #	DESCRIPTION
901	P0602901	SADDLE
902A	P0602902A	CROSS SLIDE V2.08.07
903	P0602903	GIB
904	P0602904	CROSS SLIDE NUT
905	P0602905	LEADSCREW
906	P0602906	HOUSING
907	PSB31M	CAP SCREW M8-1.25 X 25
908	P0602908	PLATE
909	P0602909	RIVET 2 X 5
910	P0602910	GRADUATED DIAL
911	PK105M	KEY 3 X 3 X 6
912	P0602912	COMPRESSION SPRING
913	P0602913	HANDWHEEL
914	P0602914	SPECIAL HEX NUT
915	PSS17M	SET SCREW M8-1.25 X 6
916	P0602916	HANDLE
917	P0602917	SLIDE BLOCK
918	P0602918	CHIP GUARD
919	PSB26M	CAP SCREW M6-1 X 12
920	PSS11M	SET SCREW M6-1 X 16

REF	PART #	DESCRIPTION
921	P0602921	DOWEL PIN
922	PSS34M	SET SCREW M5-.8 X 16
923	PN06M	HEX NUT M5-.8
924	P0602924	APRON TENSION BAR
925	PW03M	FLAT WASHER 6MM
926	PSB01M	CAP SCREW M6-1 X 16
927	P0602927	CLIP
928	PSS25M	SET SCREW M6-1 X 20
929	PN01M	HEX NUT M6-1
930	PSB48M	CAP SCREW M6-1 X 35
931	P0602931	WIPER
932	P0602932	WIPER CLAMP
933	PS07M	PHLP HD SCR M4-.7 X 8
934	P0602934	WAY COVER
935	P0602935	COVER MOUNT
936	P0602936	OIL PORT
937	PSB40M	CAP SCREW M8-1.25 X 35
938	PSB48M	CAP SCREW M6-1 X 35
939	P0602939	SPECIAL SHOULDER BOLT

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinetmaker & FDM
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____Yes _____No

8. Would you recommend Grizzly Industrial to a friend? _____Yes _____No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____Yes _____No

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number,'' which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

grizzly.com®
TOOL WEBSITE

Buy Direct and Save with Grizzly® – Trusted, Proven and a Great Value!

~Since 1983~

Visit Our Website Today For Current Specials!

ORDER
24 HOURS A DAY!
1-800-523-4777

VISA MasterCard DISCOVER NOVUS AMERICAN EXPRESS®